APPENDIX C.

RESUMES

TEAM LEADERS

Bruce DiGennaro

Frank Ligon

Scott McBain

Matthew O'Connor, PhD

Rafael Real de Asua

William Trush, PhD

Jennifer Vick

SCIENTIFIC ADVISORY TEAM

William Dietrich, PhD

Richard Harris, PhD

G. M. Kondolf, PhD

Mary Power, PhD

Terence Speed, PhD

ADDITIONAL KEY STAFF

Curtis Alling

John Bair

Christine Champe

Roberts Coats, PhD

Bruce Orr, PhD

RESUMES

TEAM LEADERS

Bruce DiGennaro

Senior Associate, EDAW, Inc.

Bruce DiGennaro is an environmental planner with over 12 years of experience in natural resource managment planning and environmental analyses. He has extensive experience dealing with riverine resource issues, having conducted studies and prepared managment plans for sections of the Feather, Klamath, Mokelumne, Sacramento, Stanislaus, and Tuolumne rivers in California. He has worked extensively on water policy issues involving the Sacramento-San Joaquin River Delta and plans to restore anadromous fish populations in the Central Valley.

Education

B.S., Environmental Planning and Management, University of California Davis, 1986

Professional Experience

CUWA CVPIA Oversight - Project Manager responsible for tracking and participating in the implementation of the Central Valley Project Improvement Act (CVPIA) for the California Urban Water Agencies (CUWA). Efforts have focused on the development and review of the PEIS and the draft Anadromous Fish Restoration Plan (AFRP). Working closely with agency staff and CUWA member agencies in proposed analyses and suggesting appropriate modifications. Intimately familiar with the CVPIA and other activities influencing water supply and water quality, including recent activities regarding the Sacramento-San Joaquin Bay-Delta.

Bay-Delta Proceedings - Project Manager responsible for assisting the East Bay Municipal Utility District (EMBUD) prepare for upcoming State Water Resources Control Board (SWRCB) hearings regarding implementation of the 1995 Water Resource Control Plan (WQCP) for the Sacramento-San Joaquin Bay-Delta. EDAW is assisting with development of testimony and exhibits on allocation methodologies, hydrodynamic and hydrologic modeling, fisheries, water supply, and economics.

Mokelumne Aquifer Recharge and Storage Project (MARS) - Project Manager responsible for environmental review of Phase 1 of a major conjunctive use effort in San Joaquin County that would provide additional water supplies to EBMUD while also helping to restore the groundwater basin in San Joaquin County. Responsible for alternatives development and screening and environmental review for the project.

Arkansas River Recreation Study - Worked collaboaratively with a multi-agency task force commissioned by the U.S. Bureau of Land Management, U.S. Forest Service, Colorado Division of Parks and Outdoor Recreation, and U.S. Bureau of Reclamation to develop an overall strategy and specific assessment techniques for quantifying recreational needs for 150 miles of the Arkansas River and three large reservoirs in Colorado. Designed and directed recreation user surveys specifically to assess the effects of changing river flows and lake levels on recreation opportunities.

North Fork Stanislaus River Hydroelectric Project - Provided technical assistance to the Northern California Power Agency regarding recreation/streamflow issues associated with the North Fork Stanislaus River Hydroelectric Project. Issues included modified temperature and flow regimes at several heavily used recreation sites (including Calaveras Big Trees State Park), recreational safety, and mitigation for lost recreation opportunities.

Mokelumne River Hydroelectric Project - Project manager responsible for assisting the Pacific Gas and Electric Company respond to additional information requests regarding recreation and whitewater boating below the Mokelumne River Hydroelectric Project in California. Worked closely with PG&E, the resource agencies, and the FERC in developing and conducting recreation and fisheries studies on the river, including an instream flow study for whitewater boating.

Washington Water Power Relicensing - Providing recreation planning advice and expertise to a Land Use, Recreation and Aesthetics Working Group (LURAWG) as part of a collaborative planning process for relicensing of the Noxon and Cabinet Gorge Hydroelectric Projects on the Clark Fork River in Montana and Idaho. The assignment involves reviewing existing recreation information, conducting a recreation demand analysis and needs assessment, and assisting the Work Group in developing an appropriate Recreation Plan for two large reservoirs along over 50 miles of the Clark Fork River. Issues include private versus public use, permitting and potential future development, shoreline access, and long-term monitoring and management. The assignment also involves assistance in the development of a settlement agreement and appropriate protection, mitigation, and enhancement measures (PM&E's).

Angels Creek Hydroelectric Project- Evaluated potential impacts of alternative flow releases on recreation opportunities and public safety in Angels Creek, California. The recreation/streamflow assessment was conducted for the Northern California Power Agency in connection with relicensing of the Angels Creek Hydroelectric Project. Techniques used included an evaluation of IFIM transept data and professional judgment based on on-site observations of several flows.

Urban Water Use Efficiency. Providing staff level assistance to the California Urban Water Agencies (CUWA) in developing a unified urban position on water use efficiency for the purposes of the CalFED Bay-Delta Program. Involved in reviewing water conservation programs and policies for all 10 CUWA member agencies and developing a unified urban position paper. Participate in CalFED workgroup on Water Use Efficiency.

Vaqueros Farms Condemnation Trial - Project Manager for the Vaqueros Farms Condemnation Trial. EDAW is supporting the Contra Costa Water District by providing expert witness testimony and courtroom exhibits for a condemnation trial involving a 6,000 acre parcel in the Los Vaqueros watershed. Issues include the suitability of the property for development, protection of endangered species, and existing rights and easements.

Clavey River Hydroelectric Project - Environmental analysist and recreation planner for the Clavey River Hydroelectric Project, a major project proposed in Tuolumne County, California. Responsible for overseeing a wide range of licensing activities and environmental analyses from preparation of the license application to assisting the FERC with NEPA scoping and documentation. Responded to several additional information requests and coordinated meetings with FERC staff in Washington, D.C.

Arkansas River Water Needs Assessment - Directed recreation studies and user surveys for the Arkansas River Water Needs Assessment commissioned by the U.S. Bureau of Land Management, U.S. Forest Service, Colorado Division of Parks and Outdoor Recreation, and U.S. Bureau of Reclamation. The project involved determining instream flow needs for 150 miles of the Arkansas River in Colorado and assessing the effects of lake level drawdowns on recreation opportunities and experiences at Turquoise, Twin Lakes and Pueblo reservoirs. Worked closely with the cooperating agencies to develop an overall strategy and specific assessment techniques for quantifying recreational needs for water and balancing those needs with other resource values and demands.

Professional Societies

National Recreation and Parks Association
The River Management Society

Frank Ligon

Senior Aquatic Ecologist, Stillwater Sciences

Mr. Ligon is an aquatic ecologist and geomorphologist specializing in investigations of the role of fluvial processes and morphology in the ecology of stream fish, invertebrates, and plant communities.

Education

MS, Wildland Resource Science (Freshwater Ecology/Fluvial Geomorphology), University of California at Berkeley, 1986
Magna Cum Laude
Phi Beta Kappa

BS, Conservation of Natural Resources, University of California at Berkeley, 1982

Professional Experience

Fisheries Ecology

Mr. Ligon managed a 10-year research program on Tuolumne River chinook salmon ecology and management. Studies included: (1) assessment of predation rates by black bass and squawfish on juvenile salmon, particularly in areas where extensive in-river gravel mining has created long, deep lake-like areas, (2) salmon spawning gravel quality studies examining the size distribution of the stream substrate; the rate of intrusion of fine sediments; the amount of fine sediments removed from the gravels by spawning salmon; salmon embryo survival-to-emergence using emergence traps; and the development of a hydraulic gravel cleaning machine, (3) invertebrate studies examining the effect of stream morphology and hydraulic conditions on benthic and drift densities and species composition, (4) juvenile salmonid studies examining distribution, migration, feeding behavior, food preferences, and growth, (5) examination of the influence of channel and floodplain morphology on stranding mortality of juvenile salmon, (6) spawning gravel availability studies in which gravels with suitable hydraulics and substrate for spawning were mapped as part of an assessment of the effects of the distribution and suitability of spawning habitat on redd superimposition, and (7) assessment of the effects of different summer flow regimes on the distribution and abundance of all fish species in the Tuolumne River (~35 species) and on invertebrates. Mr. Ligon has managed a number of other salmon ecology and restoration projects in California, Oregon, and New Zealand.

Geomorphology and Stream Ecology

Mr. Ligon has been working in conjunction with biologists and geomorphologists from UC Berkeley and Humboldt State University to develop a geomorphologically-based approach to protecting and preserving stream biodiversity. He presented this research as an invited speaker at a symposium on the ecology of large rivers at the 1993 annual meeting of the Ecological Society of America and was lead author of an invited paper on this subject for *BioScience*.

Mr. Ligon managed the fluvial geomorphology component of a hydroelectric relicensing project on the McKenzie River in Oregon. He conducted studies on the longitudinal variation in sediment supply and sediment transport capability, historic changes in channel planform and bar topography, determinants of substrate composition, effects of bank protection on channel morphology, and effects of flood control on channel complexity. He determined that the geomorphic response of the river to flood control dams on two tributaries was leading to a reduction in areas having sufficiently low shear stress to allow for salmon spawning gravel deposition. Mr. Ligon has also conducted research on

fluvial geomorphology and stream ecology on the Noyo River, Clavey River, San Pablo Creek, and many other northern California streams, and has managed the fluvial geomorphology component of a hydroelectric relicensing project on the Oconee River in Georgia.

Watershed Analysis

Mr. Ligon is responsible for the fish habitat, stream channel, and riparian components of the watershed analysis conducted by Louisiana-Pacific and the California Department of Forestry for their sustained yield plans (SYPs) and habitat conservation plans (HCPs) in northern California. As part of this project, he is developing models for assessing channel sensitivity in the field that can be extrapolated over large areas using digital terrain modeling (DTM). He is project manager for a 1,000,000-acre watershed analysis in the North Umpqua River basin. This project is incorporating hydroelectric dams and facilities into a watershed analysis and is developing a reference model of stream channel morphology and aquatic habitat to aid in channel assessment and the development of management and mitigation strategies for ecosystem restoration and salmon and trout enhancement. Mr. Ligon managed a project for the El Dorado National Forest in California to develop a stream channel assessment procedure that would facilitate interpretation of changes in geomorphic processes and morphology in terms of their implications for aquatic biota.

Aquatic Invertebrate and Algal Ecology

Mr. Ligon used aquatic invertebrates to monitor the effects of timber harvesting, post-fire management, and cattle grazing on stream ecology for the US Forest Service. He designed and conducted a study for the California Department of Forestry on the effects of timber harvest activities on stream algal ecology. He participated in a study examining the effects of stream flow regulation on invertebrate drift and benthic communities and their relation to fish populations and feeding preferences. He has assessed food limitations of juvenile salmon using drift and benthic sampling of aquatic invertebrates, stomach content analysis, juvenile salmon growth rates, and bioenergetic modeling.

Professional Affiliations

American Fisheries Society
North American Benthological Society

Selected Publications and Presentations

Ligon, F.K., A.L. Percival, and T.P. Speed. Submitted. The effects of turbidity on largemouth bass feeding rate and implications for salmon management.

Ligon, F.K., W.E. Dietrich, and W.J. Trush. 1995. Downstream ecological effects of dams: A geomorphic perspective. *BioScience.*

Baker, P.F., T.P. Speed, and F.K. Ligon. 1995. The influence of temperature on the survival of chinook salmon smolts (*Oncorhynchus tshawytscha*) migrating through the Sacramento - San Joaquin River Delta of California. *Canadian Journal of Fisheries and Aquatic Sciences.*

Ligon, F.K. and W.E. Dietrich. 1991. River management for floodplain development and salmon—are they compatible? A geomorphological analysis of a cobble-bedded alluvial river ecosystem. Presented at the Fifth International Symposium on Regulated Streams.

Ligon, F.K. 1990. The effects of predation on salmon population dynamics. Presented at the Pacific Fisheries Biologists Annual Meeting.

Erman, D.C. and F.K. Ligon. 1988. Effects of flow fluctuations and fine sediment

additions on stream fish and invertebrates below a water filtration plant. *Environmental Management* 12:85-97.

Scott McBain

General Partner/McBain & Trush
Assistant Hydraulic Engineer/Fluvial Geomorphologist

Scott McBain is an assistant hydraulic engineer/fluvial geomorphologist whose special interests include bed mobility, bedload transport, effects of high flows on channel morphology, watershed sediment yields, and stream restoration.

Education

MS, Master of Science, Department of Civil Engineering. Hydraulic Engineering/Geomorphology emphasis. University of California at Berkeley, Berkeley, CA 94720 9/92-12/93

Studied river engineering and geomorphology. Coursework included Fluvial Geomorphology, Geomorphology, Analysis of Environmental Data, Mechanics of Sediment Transport, River Engineering, Surface Water Hydrology, and Technical Communication. Major professors: H.W. Shen and W. E. Dietrich

BS, Environmental Resources Engineering, Water Quality/Fisheries emphasis, Humboldt State University, Arcata, CA 95521 8/84-12/89

Program included environmental monitoring, water quality analysis, water and waste water treatment, applied hydraulics, limnology, reservoir management, in addition to core engineering courses.

Certifications

Engineer in Training, State of California, April 1989

Professional Experience

1/95 -Present

General Partner, McBain & Trush
Development of river corridor restoration plans, including:
Mono Basin Stream Restoration Work Plan
Maintenance flow study on the Trinity River
Tuolumne River, California Corridor Restoration Plan

4/92-4/95
Assistant Hydraulic Engineer

Private Consultant
Clients included:
Bureau of Reclamation- Sacramento River, California channel reconstruction design review
Bureau of Land Management- John Day River total station surveying and channel restoration design review
EA Engineering- Oconee River, Georgia bedload modeling; Tuolumne River, California channel restoration
Humboldt State University Institute for River Ecosystems- Geomorphic and hydraulic analysis of Clavey River and Cherry Creek, California, as part of a pilot maintenance flow project.
Trinity Associates- Kidder Creek, California channel restoration design; Trinity River channel reconstruction design
SHN Geologists and Engineers-Kidder Creek, California channel restoration construction oversight

Dr. Luna B. Leopold-Garcia River, California estuary data collection, analysis, and restoration design

8/93-7/94
Assistant Hydraulic Engineer

Center for Environmental Design & Research, U.C. Berkeley, 390 Wurster Hall, Berkeley, CA 94720

Designed channel geometry and planform for restoration project on Jamison Creek within Plumas-Eureka State Park, California. Duties included historical analysis of geomorphic conditions, establishing field data collection program, designing geomorphically stable channel and riparian community, and establishing a long term field monitoring program.

8/89-4/92
Assistant Environmental Engineer

Trinity Restoration Associates, Inc., P.O. Box 820, Arcata, CA 95521

Design and project management of chinook spawning habitat restoration projects on the lower Tuolumne River. Work consisted of spawning channel relocation, flood plain and riparian restoration design, and historic channel analysis. Tasks included surveying, field stakeout, construction supervision, hydraulic analysis, hydrological analysis, air photo analysis, and interpretation of riparian association and channel morphology adjustments due to pre- and post- dam hydrological changes.

Performed historic channel analysis of the lower Tuolumne and Merced Rivers by researching historical maps, surveys, and government records for analysis of channel migration from 1854 to the present time. Analyzed channel migration and land/water use changes, and prepared documentation of channel evolution to be used for boundary determination for State owned lands.

Assisted in project development, sampling design, report writing, and field work for maintenance flow study on the Trinity River. Monitored morphological changes associated with controlled releases, such as bed scour, bed mobility (incipient motion), bedload transport, bed surface morphology, and 3-dimensional structure of alluvial features. Supervised field crews and assisted in sampling design and layout. Assisted in report exhibit preparation and technical writing.

Assisted in aggregate mining reclamation plan designs on the lower Tuolumne and Merced Rivers, consisting of waterfowl and warm water fish habitat design, riparian restoration design, and incorporation of designs into AutoCAD for documentation and presentational use. Utilized AutoCAD and DCA software for 3-dimensional modeling and volumetric analysis of reclamation design alternatives.

5/89-8/89
Assistant Engineer

Engineering Science, Inc., 9404 Genesee Ave. Suite 140, LaJolla, CA 92037

Land use planning, design, and computer modeling of the waste water system for the City of Escondido; design and modeling of water and waste water systems for Padre Dam Municipal Water District.

5/88-9/88
Internship, Senior Project

The Nature Conservancy-McCloud River Preserve, P.O. Box 409, McCloud, CA 96064

Developed a database of trout spawning gravel quality on the McCloud River, including experimental design, substrate sampling using a cryogenic probe, and analysis of trout spawning gravel quality. Co-developed and calibrated an improved substrate sampling device that measures local gravel permeability and cryogenically extracts substrate for particle size analysis.

Published Material and Speaking Engagements

FHR Currents, a Forest Service technical bulletin, paper titled "Standpipe to Determine Permeability, Dissolved Oxygen, and Vertical Particle Size Distribution in Salmonid Spawning Gravels", April 1994.

Invited speaker to Western Division American Fisheries Society Conference in Flagstaff, AZ, June 1994. Presented "Maintaining Dynamics of Steep Bedrock Rivers: Implications for Channel Morphology and Biological Communities" in Ecosystem Management in Regulated Rivers session.

American Society of Civil Engineers Waterpower '95 Conference in San Francisco, CA, July 1995. Published and presented "Bed Mobility and Scour on a Regulated, Gravel-Bed River" in Environmental session.

American Society of Civil Engineers Waterpower '95 Conference in San Francisco, CA, July 1995. Published "Assessing Downstream Variation of Fluvial Processes for Recommending Maintenance Flows in Regulated Rivers" in Environmental session.

Matthew D. O'Connor, Ph.D.

Geomorphologist, Stillwater Sciences

Dr. O'Connor is a geomorphologist and hydrologist with broad technical expertise in wildlands and forested mountain environments. He has over 11 years of experience analyzing stream, watershed, and wetland resources as a professional consultant and in academic research.

Education

Ph.D., *Forest Hydrology*, University of Washington, Seattle, 1994

M.S., *Wildland Resource Sciences*, University of California, Berkeley, 1986

B.S., *Environmental Earth Sciences*, Stanford University, 1981

Certifications

Certified by Washington Department of Natural Resources to conduct Level 2 Watershed Analysis for Mass Wasting, Surface Erosion, Hydrology, Riparian Function, and Channel Condition modules.

Professional Experience

Fluvial Geomorphology

Conducted field research and modeling of sediment transport in headwater streams as a major element of research for doctoral dissertation. Has performed site-specific analyses of sediment transport in large stream channels, including prediction of transport thresholds and assessment of bed stability. Was project manager of an investigation of hydraulics and sediment transport for an Army Corps of Engineers floodway for Marin County, California. Conducted an analysis of sediment flushing-flow requirements in a Sierran stream for a large utility.

Wildland Hydrology

Has maintained stream gaging sites and records for various periods in Washington and California. Have modeled rainfall-runoff relationships at dissertation research field sites during the past two years. Assisted in the development of a water budget for a coastal California community. Analyzed potential erosion associated with a transmission line project in north-central California.

Wetland Delineation and Mitigation

Has participated in several wetland projects in central California. Prepared wetland maps based on field investigationis and obtained formal consent of delineations from the Army Corps of Engineers. Designed and planned a wetland mitigation project and obtained Section 404 permits from the Army Corps to fill wetlands.

Watershed Analysis

Has conducted analyses of watershed conditions in 8 drainages in Washington state over the past 3 years as an independent consultant for teams employed by private timber companies. Study areas included portions of the Olympic Mountains, east and west sides of the Cascade Range, the upper Columbia River, and the Puget Sound Lowlands. Washington DNR watershed analysis methodology was used in these studies to assess stream channel conditions, riparian conditions, and watershed geomorphology. The methodology was also used as the basis of an analysis of hydrologic conditions. Conducted a detailed, quantitative analysis of mass wasting and stream channel response under contract to the Olympic National Forest. This analysis quantified sediment

production over a 40-year period. Channel response was linked to sediment production using historic aerial photographs to measure sediment storage in stream channels.

Fish Habitat and Stream Ecology

Quantified the influence and supply rate of large organic debris on fish habitat in a north-coastal California stream as an employee of the Forest Service Experiment Station. Conducted field research on large organic debris in headwater streams and the effects of logging on debris as research for a Master's degree.

Professional Affiliations

American Geophysical Union, Hydrology Section

Selected Publications and Research Reports

O'Connor, Matthew D. 1994. Sediment transport in steep tributary streams and the influence of large organic debris. Doctoral dissertation. University of Washington, Seattle.

O'Connor, Matthew D., and R. Dennis Harr. 1994. Bedload transport and large organic debris in steep mountain streams in forested watersheds on the Olympic Peninsula, Washington. Research Report TFW-SH-94-001. Prepared for Washington Department of Natural Resources and Timber/Fish/Wildlife, Sediment, Hydrology, and Mass Wasting Steering Committee.

O'Connor, Matthew D., and Terrance W. Cundy. 1993. North Fork Calawah River watershed condition survey. Part I: Landslide inventory and geomorphic analysis of mass erosion; Part II: Channel condition and cumulative effects of mass wasting in headwater tributaries. Technical reports prepared for USDA Forest Service, Olympic National Forest.

O'Connor, Matthew D. 1993. Bedload transport processes in steep tributary streams, Olympic Peninsula, Washington, U.S.A. Pages 243-250 *in* Wang, S. Y., editor. Advances in hydro-science and engineering. Volume 1. Center for Computational Hydroscience and Engineering, University of Mississippi.

[several co-authors]. 1992. Fundamental elements of ecologically healthy watersheds in the Pacific Northwest Coastal Ecoregion. Pages 127-188 *in* Watershed management: Balancing sustainability and environmental change. Springer-Verlag, New York.

O'Connor, Matthew D., and Robert R. Ziemer. 1988. Coarse woody debris ecology in a second-growth *Sequoia sempervirens* forest stream. Pages 165-171 *in* Proceedings of the California riparian systems conference. General Technical Report PSW-110. USDA Forest Service, Davis, California.

O'Connor, Matthew D. 1986. Effects of logging on organic debris dams in first order streams in northern California. Master's thesis. University of California, Berkeley.

Rafael Real deAsua

GIS and Image Processing Analyst, Stillwater Sciences

Mr. Real de Asua is a GIS and Image Processing analyst and programmer with 9 years of experience in computerized mapping and GIS and 3 years in image processing. He participates in the analysis, modeling, and execution of the GIS and image processing elements of all projects, using the ESRI ARC/INFO, ERDAS, and Intergraph/Microstation software systems. Mr. Real de Asua designs and codes programs to automate GIS processes on the ARC/INFO platform. He has served as an analyst and programmer for GIS projects for county, state, and federal agencies, including the analysis of land use impacts, forest health, fisheries, ground water pollution, and suitability for residential development.

Education

M.L.A., University of Pennsylvania; Landscape Architecture (GIS specialization); 1990
B.A., Universidad de Zaragoza, Departamento de Geografia, Spain; Physical Geography, with emphasis in Geomorphology; 1983

Professional Experience

Environmental Assessment and Investigation—In support of a Sustained Yield Plan for forests owned by Louisiana-Pacific in California, generated GIS data at a planning watershed level to be used in ecological models of soil erosion, stream channel sensitivity, fish distribution, and hydrology. Tasks included the automation of the production process using ARC/INFO AML language and the determination of a method to automatically calculate stream channel slopes from existing digital data to help in the prediction of fish habitat.

Prepared a GIS for the evaluation of stream channel conditions of various watersheds in Klamath and Eldorado National Forests. Tasks included designing the GIS; transferring data from MOSS to ARC/INFO; generating lattices and contour line maps from USGS 7.5' Digital Elevation Models; supervising data input and performing quality control; and writing software to calculate longitudinal slopes of streams and to automate plotting.

In support of a regional watershed plan, built a regional spatial database at several scales and executed database queries for economic and water quality consultants charged with impact assessments. Wrote software to check and display minimum distances from tax parcels to water bodies to facilitate automating the data entry and reformatting of more than 40,000 records from tax parcel information into the ARC/INFO format, to automate the generation of different buffers for hydrologic elements; to locate land parcels subject to future development; to develop templates for plotting different maps; and to automate the scaling of plots from A size to E size.

For a Remedial Investigation and Feasibility Study of the Passaic River, New Jersey, generated outfall location, bathymetric changes, and chemical sample location maps. Tasks included incorporating all digital and non-digital data, ranging from databases to aerial photographs and surveying maps, into a GIS; generating bathymetric models for 1989 and 1949; map setup; and cartographic production.

To support the development of an environmental plan to locate areas for timber harvesting in the Shasta-Trinity National Forest, developed a GIS; imported MOSS data from 8 mm tape into ARC/INFO format; participated in the determination of sample plots; and coded, queried, analyzed, and plotted point,

line, and polygon features for field maps and final reports.

For the Bureau of Indian Affairs, performed quality control on digitized data, queried and generated reports based on vector and raster queries performed in ARC/INFO to be incorporated in hydrologic models.

For the Los Angeles Department of Water and Power, set up a GIS of the Owens River between Crawley Dam and Pleasant Valley Reservoir to define stream channel conditions for use in different sedimentation analyses. Wrote macros to automate plotting.

For the monitoring of carbon monoxide in the Amazon Basin, proposed a program and an accompanying GIS to be used by several Native American peoples and nongovernmental organizations (NOGS) in Peru, Bolivia, and Ecuador. Traveled to the sites, interviewed the local authorities, assessed existing materials and needs, discussed the possible solutions, and wrote a report with recommendations.

To evaluate the impacts of air pollution, created a model to estimate the number of people and land use properties affected by high, medium, and low concentrations of plutonium and several other contaminants in the air between 1950 and 1990. Wrote software to automate the importation of data from TIGER files (Digital Census Information) into ARC/INFO, to determine the population affected, and to generate the plots. For the siting of residential developments for a science city in Taiwan, built a demonstration in ARC/INFO showing several scenarios using development indexes based on transportation, location, and natural factors.

For the development of a GIS prototype for the island of St. John (U.S. Virgin Islands), participated in the development of a potential erosion test model in ARC/INFO.

For the creation of a regional ground water assessment program, participated in the creation of a land use map based on the Anderson Class II classification, made from aerial photographs; helped in data processing and cleaning coverages. Wrote software to translate data from ARC/INFO to Intergraph/Microstation and vice versa and for data quality control.

Land Cover and Vegetation Classification—For the Georgia Power Company, participated in the image processing and classification of bottomland hardwoods. Advised in the selection of training sites and performed supervised and unsupervised classifications with ERDAS; transferred data between ERDAS and ARC/INFO, and in ARC/INFO between raster and vector modules; processed data in ARC/INFO both in the raster module (GRID) as in the vector module (ARC).

For the Bureau of Indian Affairs, conducted supervised and unsupervised classifications of different types of wetland areas in ERDAS IMAGINE (v. 8.1); transferred data between ERDAS and ARC/INFO, and overlaid the results with other layers from the GIS.

Helped in the classification of 24 types of vegetation cover in Central Spain. Generated a classification of the existing vegetation; advised on the number and types of classes to be classified; selected training areas; and participated in the classification of Thematic Mapper and SPOT images.

Participated in the classification of 22 types of land cover in the Basque Country (Spain). Designed the classification; classified stereoscopic pairs of aerial photographs; ground-truthed the classification; and wrote a report and documentation.

GIS Inventory—For the East Bay Utility Municipal District (EBMUD), participated in the creation of a natural factor GIS. Participated in the design of the GIS, supervised and performed quality control on different layers of the GIS, analyzed and queried the data, plotted maps at different scales and paper sizes, and backed up, documented, and prepared the information for delivery on 8 mm or 4 mm tapes.

For Robins AFB, Georgia, participated in the incorporation of all available environmental data into an Interstation GIS running on an Intergraph workstation. Prepared data input and analysis modules for all categories of information collected in ARC/INFO.

For the City of Newark, New Jersey, and for West Philadelphia, Pennsylvania, developed a GIS of natural factors . Tasks included database design and building, data input, transfer, processing and analyses, and documentation.

Ecological Planning and Design—For Randolph AFB developed a grounds maintenance plan to be included in the Integrated Natural Resources Management Plan. Tasks included a site visit, discussions with the client to focus on the most viable plan, development of the outline, and report writing.

For Robins AFB participated in the Natural Resources Development Plan. Tasks included the preparation of opportunities and constraints matrix for six proposed alternatives on non-active military areas within the base, and participation in the discussions for the weighting of alternatives.

For the Basque Autonomous Government, at the request of the Department of Agriculture wrote a report criticizing the Proposed General Land Use Plan.

Participated in the ecological design of several zoo exhibits for different zoos in the United States and Canada: Savanna/Waterhole Exhibit in Brookfield Zoo, Chicago; Great Ape Exhibit in Denver; Taiga/Northern Forests Exhibit, Seattle; General Master Plan, Toronto Zoo, Toronto. Participated in the design and preparation of the construction documents for the zoos.

Software Application Development—Programming for conversion of data from IGDS to ARC/INFO format and vice versa. Import and formatting of data from tape (ASCII, EBCDIC, DLG, TIGER) files into ARC/INFO. Created templates for plotting and for re-scaling plots. Programming to check visually the distances between geographic elements. Development of window interfaces in ARC/INFO.

List of Skills

GIS applications: ESRI ARC/INFO in UNIX environment; Intergraph SPAN/SPED in VMS environment and Microstation PC/workstation.

Computer Programming: ESRI Arc Macro language (AML); Intergraph User Commands; AWK; C.

Image Processing and Aerial Photointerpretation: ERDAS; Infrared and True color photointerpretation (orthophotos or stereoscopic).

GIS System Management: Workstation and microcomputer system management and customization in Unix environment.

Fluent in French and Spanish.

Professional Societies

Bay Area Automatic Mapping Association (BAAMA), the Bay Area chapter of the Urban and Regional Information Systems Association (URISA)

California Geographic Information Association (CGIA)

Selected Publications

Leven, A. and R. Real de Asua. 1996. Effective GIS Display for Public Involvement Meetings. Poster. 1996 Soil and Water Conservation Society, *Keystone Resort, Colorado.*

Real de Asua, R. 1996. Predicting Fish Habitat Using Geographic Information Systems. Poster. 1996 ESRI Users Conference. Palm Springs, California.

Real de Asua, R. 1996. Hayfork AMA Forest Health Analysis. Presentation. 1996 California GIS Conference. San Francisco, California.

Real de Asua, R. and J. Zablotney. 1995. Hayfork AMA Forest Health Analysis. Poster. 1995 ESRI Users Conference, Palm Springs, California. Published in the ESRI Map Book, Volume 11 (1995).

William Trush, PhD

General Partner/McBain & Trush
Director, Institute for River Ecosystems

Dr. William Trush is an experienced geomorphologist and ecologist. In addition to his work with McBain and Trush, Dr. Trush is an adjunct professor in the Humboldt State University Fisheries Department, where he teaches courses in stream ecology and coastal stream management, and Director of the Humboldt State University Institute for River Ecosystems. His specialties include anadromous fish ecology, anadromous fish interactions with fluvial geomorphology and hydrology, channel maintenance flows, riparian ecology, macrobenthic invertebrate ecology, and stream restoration.

Education

Ph.D. Wildland Resource Science (1991). Department of Forestry and Natural Resources, University of California, Berkeley, CA 94720. Dissertation Title: *The Influence of Channel Morphology on Spawning Steelhead Trout in South Fork Eel River Tributaries.*

MS, Zoology (1979). Center for Environmental Studies, Virginia Polytechnic Institute and State University, Blacksburg, VA. Thesis Title: *The Effects of Area and Surface Complexity on the Structure and Formation of Stream Benthic Communities.*

BA, Zoology (1974). Pennsylvania State University, University Park, PA.

Professional Research Employment

Director (1991-present). Humboldt State University Institute for River Ecosystems. The Institute mission is to further our understanding, preservation, and management of river ecosystems. My duties include fiscal management, proposal development, and research. The River Institute manages the following on-going projects:

- Development of a new assessment procedure and handbook for designing culvert systems on logging roads,
- Evaluation of geomorphic indicies for detecting cumulative impacts to Northern California streams,
- Maintenance flow recommendation procedures for a Sierra Nevada river,
- Facilitate review of a proposed USFS maintenance flow methodology.

Research projects (with Dr. Terry Roelofs as co-principal investigator) with the Fisheries Department of Humboldt State University include:

- an assessment of Benbow Dam effects on anadromous fish populations in the South Fork Eel River,
- a limnological and fisheries investigation of Stone Lagoon, California,
- cutthroat trout restoration program for McDonald Creek, Humboldt County (for the Department of Parks and Recreation),
- Salmon fisheries investigation for the lower Smith River, CA.

Partner in McBain and Trush (1995) and Private Consultant (1990-present). *Recently completed and ongoing projects include:*

- Court-appointed member to the Mono Lake Restoration Technical Committee to advise restoration strategies and biological sampling programs for several tributaries entering Mono Lake (1993-1995). Developing restoration plan for LADWP,

Examining influence of the Sinclair Project, Oconee River, Georgia on channel morphology (1993-1994),
Geomorphic and anadromous fish evaluation of instream gravel mining on the Mad River, Humboldt County. I serve on the Scientific Design and Restoration Committee (1992-ongoing),
Developing restoration designs for the Tuolumne River, CA. (1989-ongoing),

Maintenance flow and river channel restoration recommendations for the Trinity River (1992-ongoing),
Fluvial-geomorphic assessment of the Klamath River Basin for the National Biological Survey (1995),
Developing a stream channel monitoring program for Simpson Timber Co. (1995-ongoing).

Senior Scientist (1989-1991). Trinity Restoration Associates, P.O. Box 820, Arcata, CA 95521. Design of wetlands as part of aggregate mining reclamation planning. Design and construction of alluvial channels for spawning and riparian habitat restoration in the Tuolumne River.

Fishery Biologist (1988-1989). EA Engineering, 41A Lafayette Circle, Lafayette, CA 94549. Analysis of smolt migration runs of the Tuolumne River. Development of a maintenance flow recommendation for the Clavey River, California.

Teaching Experience

Adjunct Professor (1989-present). Fisheries Department, HSU, Arcata, CA 95521. Instructor for the following courses: Coastal Stream Management, Technical Writing for Fisheries, Restoration of Aquatic Ecosystems, Watershed Dynamics and Restoration, Conflict Resolution in Natural Resources Management, Marsh Ecology, Stream Ecology, Graduate Fisheries Seminar, and Fisheries Techniques.

Instructor (1990-present). Teton Science School, Kelly, Wyoming. Teaching a three day workshop on fluvial processes and stream restoration with Dr.Luna Leopold.

Instructor (1987-1988). Landscape Architecture Department, University of California, Berkeley, CA 94720. Instructor for: Hydrology for Environmental Planners and Ecological Analysis.

U.C. Berkeley Graduate Teaching Assistant (1982-1986). Assistant for the following courses: Environmental Policy, Recreation Management, Sociology of Natural Resources, Forest Soils, and Forest Hydrology.

Committee Membership

Lee Vining and Rush Creek Restoration Technical Committee (1993-1994)
Mad River Scientific Design and Restoration Committee (1993-present)
Fishery Biologist for the California Advisory Committee on Salmon and Steelhead Trout (1990-1994)
Director for the Salmonid Restoration Federation (1990-1995)
Stone Lagoon Action Committee (1991-1994)
Smith River Advisory Council (1992-1994)

Recent Publications and Proceedings

Ridenhour, R.L., Hunter, C., and W.J. Trush. 1995. *Draft Mono Basin stream restoration work plan*, prepared for Los Angeles Department of Water and Power, October 4, 1995 228 p.

Trush, W.J., Franklin, R., and S. McBain. 1995. *Assessing downstream variation of fluvial processes for recommending maintenance flows in regulated rivers.* pp. 122-131, in Cassidy, J.J.(ed.), Waterpower'95 Volume 1, Proceedings of the International Conference on Hydropower, American Society of Civil Engineering, San Francisco, CA.

McBain, S. and W.J. Trush. 1995. *Channel bed mobility and scour on a regulated, gravel-bed river.* pp. 1941-1950, in Cassidy, J.J. (ed.), Waterpower'95 Volume 3, Proceedings of the International Conference on Hydropower, American Society of Civil Engineering, San Francisco, CA.

Ligon, F.K., Dietrich, W.E., and W.J. Trush. 1995. *Downstream ecological effects of dams: A geomorphic perspective.* Bioscience 45(3):183-192.

McBain, S. and W.J. Trush. 1995. *River channel morphological and sediment changes in the Klamath Basin, Oregon and California,* prepared for the Technical Working Group, Klamath Fisheries Task Force, May 1995, 13p. and appendices.

Trush, W.J. and S. McBain. 1995. *Preliminary channel maintenance flow recommendations for the mainstem Trinity River below Lewiston Dam.* pp. 8-13, in Ridenhour, R.L. (ed.) Proceedings of the Trinity River Restoration Colloquium, Humboldt Chapter of the American Fisheries Society, funded by the U.S. Bureau of Reclamation, 36p.

Trush, W.J. 1994. *A review of the Mt. Hood National Forest Fish Habitat Restoration Program for Mt. Hood National Forest,* USFS, October 15, 1994.

McBain, S., Trush, W., and W. Smith. 1994. *Developing a maintenance flow methodology: A sample plan for steep bedrock-controlled Sierra rivers.* Humboldt State University Institute for River Ecosystems, IRE-08-94-01, 95p.

Trush, W.J. 1994. *Should the primary goal for anadromous salmonid restoration in the Klamath Basin be geomorphic?* pp.38-42, in Hassler, T.J. (ed.) Klamath Basin Fisheries Symposium, Proceedings of a symposium held in Eureka, California, 23-24 March 1994, California Cooperative Fishery Research Unit, 237p.

Trush, W.J. 1994. *Understanding riparian dynamics: A management imperative.* pp. 7-8, in Interdisciplinarian Perspectives of Riparian Ecosystems, Humboldt State University, Arcata, CA September 24, 1994.

Ligon, F., Dietrich, W.E., Power, M., and W.J. Trush. 1993. *Variable ecological responses of large rivers to dams,* presented at the Ecological Society of America Annual Meeting, Symposium for Ecological Approaches to the Study of Large Rivers, Univ. Wisc., Madison, August, 1993.

Recent Speaking Engagements

Can We Successfully Manage or Restore Riverine Ecosystems?
California Riparian River Ecosystems Conference IV, Sponsored by University of California Davis, Sacramento, CA November 16, 1995.

Can You Restore A River Without Water?
River Recovery and Restoration, Western Regional Instream Flow Conference III, Park City, UT November 4, 1995.

One Land Ethic for Everyone.
Luna Leopold Essays on Ethics in Academia and Consulting, University of California, Berkeley, CA October 28, 1995.

Assessing Cumulative Impacts in Stream Channels.
Watershed Academy, California Department of Forestry, Humboldt State University, Arcata CA August 16-18, 1995.

Stream Channel Treatments.
Watershed Resoration and Assessment, National Advanced Resource Technology Center, USFS, Marana, AZ April 6, 1995.

Preliminary Channel Maintenance Flow Recommendations for the Mainstem Trinity River Below Lewiston Dam.
Trinity River Restoration Colloquium, Humboldt Chapter of the American Fisheries Society, sponsored by the U.S. Bureau of Reclamation, Weaverville, CA April, 1995.

A Primer on Stream Channel Dynamics.
California Licensed Foresters Association, Sacramento, CA March 2, 1995.

Methods for Restoring Channel Form and Function.
Thirteenth Annual Salmonid Restoration Federation Conference, Sonoma State University, Santa Rosa, CA February 26, 1995.

Understanding Riparian Dynamics: A Management Imperative.
Interdisciplinarian Perspectives of Riparian Ecosystems, College of Natural Resources, Humboldt State University, Arcata, CA September 24, 1994.

Ecological Health of Rivers Below Dams.
Western Division American Fisheries Society, Northern Arizona State University, Flagstaff, AZ June 21, 1994

Should the Primary Goal for Anadromous Salmonid Restoration in the Klamath Basin be Geomorphic?
Klamath Basin Fisheries Symposium, California Cooperative Fishery Research Unit, Eureka, CA March 23, 1994.

Jennifer C. Vick

Ecologist/Geomorphologist, Stillwater Sciences

Ms. Vick has more than ten years experience in ecology and geomorphology. Her areas of expertise include geomorphology, hydrology, sediment transport, and riparian and aquatic ecology. She is experienced in historic geomorphic assessment, geomorphic and hydraulic field surveying methods, sediment transport analysis, hydraulic and hydrologic analysis, as well as invertebrate and fish sampling, vegetation analysis, and environmental assessment. Ms. Vick is also experienced in project planning and management and has worked on restoration plans for several California streams and rivers.

Education

M.L.A., Environmental Planning, University of California at Berkeley 1995
Graduate Studies in Marine Biology and Marine Sciences, University of Oregon and University of California at Santa Cruz (1988-1989)

B.S.,Zoology, University of Georgia, Athens, Georgia, 1988
Magna Cum Laude
Phi Beta Kappa

Professional Experience

Geomorphology and Hydrology

Ms. Vick has conducted geomorphic, hydraulic, and hydrologic analyses on the Merced, Tuolumne, and Stanislaus Rivers. She completed an extensive analysis of geomorphic trends in the Merced River, including assessment of the hydrologic and geomorphic impacts of dams and instream and floodplain mining. Her work included field surveys and interpretation, aerial photograph interpretation, digital mapping and analysis, and extensive application of statistical methods to hydrologic data. From her analysis, she proposed three restoration approaches that could be developed for the Merced River. Ms. Vick presented the results of her research at a meeting of the American Geophysical Union in 1995. The University of California Water Resources Center published a summary of her thesis in 1996. This study was the first extensive geomorphic study conducted in this river corridor.

In 1995, Ms. Vick (with Dr. G.M. Kondolf and Timothy Ramirez) evaluated the performance of three reconstructed spawning riffles on the Merced, Tuolumne, and Stanislaus Rivers. She conducted field surveys and hydraulic and sediment transport analyses which documented actual and predicted bed mobility thresholds at the riffle reconstruction sites. The results of this research were published by the University of California Water Resources Center and in the Transactions of the American Fisheries Society.

On the Cosumnes River, Ms. Vick conducted the geomorphic component of a large-scale floodplain restoration plan developed for The Nature Conservancy. She assessed historic changes in channel planform and cross section, changes in sediment transport capacity caused by channel incision and floodplain constriction (due to levees), floodplain sedimentation at restored sites, and hydrology and flood attenuation. Her work included interpretation of historic maps and surveys, planning and interpretation of current channel surveys, interpretation and assessment of watershed geology, sediment transport modeling, and hydrologic analysis.

Ms. Vick has also conducted geomorphic assessments and developed management or restoration recommendations on urban and rural streams in Alameda, Contra Costa, and Santa Cruz Counties. She has also worked extensively on the application of geomorphic, hydraulic, and hydrologic information to the planning and design of ecological restoration projects.

Ecology

At the University of Georgia, Ms. Vick participated an ecological evaluation of microhabitat partitioning of native fishes in cold-water streams. Her work included invertebrate and fish sampling and identification and processing of benthic macroinvertebrate samples.

Ms. Vick spent four years as an ecologist at the Corps of Engineers. During this time, she evaluated the environmental impacts of a variety of projects and provided technical input to the development of wetland and riparian mitigation and monitoring plans. She developed guidelines for monitoring vegetation and channel morphology at riparian habitat mitigation sites. These guidelines are used by the Corps of Engineers San Francisco District and were adopted by the Texas Department of Parks and Wildlife. She also served on or chaired several technical advisory committees which were developing restoration plans for the Salinas River, Russian River, and Carmel River lagoons; Bolinas Lagoon; and Muir Beach (Big Lagoon).

Ms. Vick participated in an analysis of the ecological values of floodplain and terrace aggregate mining pits in central California. With research assistants from the University of California, she sampled riparian vegetation established at these pits and developed relationships between surface slope, soil quality, and vegetation vigor and extent. Results of this research were presented at a meeting of the Society for Ecological Restoration.

Environmental Compliance

Ms. Vick has four years experience in environmental regulation. She has prepared more than fifty environmental assessments and has managed the preparation of three Environmental Impact Reports/Statements. She has also participated in formal and informal endangered species consultations with he U.S. Fish and Wildlife Service and in formal coordination with the California Department of Fish and Game, National Marine Fisheries Service, Environmental Protection Agency, and Regional Water Quality Control Board

Professional Affiliations

American Geophysical Union
Ecological Society of America
Society for Ecological Restoration
Society of Wetland Scientists
California Native Plant Society

Selected Reports and Publications

Kondolf, G.M., J.C. Vick, and T.M. Ramirez. 1996. Salmon Spawning Habitat Rehabilitation in the Merced, Tuolumne, and Stanislaus Rivers, California: An Evaluation of Project Planning and Performance. University of California Water Resources Center Report No. 90, Davis, CA.

Kondolf, G.M., J.C. Vick, and T.M. Ramirez. 1996. Salmon Spawning Habitat Rehabilitation in the San Joaquin Valley, California: An Evaluation of Project Planning and Performance. Transactions of the American Fisheries Society 125:899-912.

Vick, J.C. 1995. Channel Change from Dam Construction and Instream Gravel Mining in the Lower Merced River, California: Implications for Restoration of Native Salmonid Populations, EOS Trans AGU, 76(17), Spring Meeting Supplement, S152.

Vick, J.C. 1995. Codornices Creek Restoration Project: Channel Hydraulics and Sediment Transport. Prepared for Andrea Lucas Associates, Berkeley, CA.

Vick, J.C. 1995. Habitat Rehabilitation in the Lower Merced River: A Geomorphological Perspective (Masters Thesis). Center for Environmental Design Research Report Numbers CEDR-03-95 and CEDR-04-95, University of California at Berkeley, Berkeley, CA.

Vick, J.C.. 1994. Guidelines for Monitoring Riparian Mitigation Projects. U.S. Army Corps of Engineers, San Francisco District, San Francisco, CA.

Kendall, T.R., J.C. Vick and L. Forsman. 1991. Sand as a Resource - Managing and Mining the Northern California Coast. Proceedings of the Seventh Symposium on Coastal and Ocean Management, ASCE, NY, NY.

Presentations to Professional Meetings and University Classes

"Habitat Rehabilitation in the Lower Merced River: A Geomorphological Perspective" - Guest lecture in Geomorphology in River and Stream Restoration, University of California Extension, (April 1995, 1996, 1997) and Hydrology for Planners (LA 222), University of California, April 1996.

"Wetland Regulatory Process and the Role of Compensatory Mitigation" - Guest lecture in Hydrology for Planners (LA 222), University of California, March 1995 and April 1996.

"Channel Change from Dam Construction and Instream Gravel Mining in the Lower Merced River, California: Implications for Restoration of Native Salmonid Populations" - Presentation to the American Geophysical Union Special Session to Honor the Career of M. Gordon Wolman, June 1995.

"Wetland Mitigation: Policy or Poker Chip?" - Guest lecture in Landscape Architecture and Environmental Planning Colloquium (LA 253), University of California, October 1994.

"Wetland Mitigation - Projects and Policy" - Guest lecture in Restoration of Rivers and Streams (LA 254), University of California, October 1993.

RESUMES

SCIENTIFIC ADVISORY TEAM

William Eric Dietrich — Vita

Education:

B.A., Occidental College, 1972
M.S., University of Washington, 1975
Ph.D., University of Washington, 1982

Present Position:

Professor, University of California, Berkeley, Department of Geology and Geophysics

Experience:

Summer intern, Water Resources Technical Division, Washington, State Department of Ecology, 1974
Research Assistant, University of Washington, 1978-1981
Assistant Professor, University of California, Berkeley, 1981-1986
Associate Professor, University of California, Berkeley, 1986- 1990
Occasional consultant on hydrology, fluvial and hillslope geomorphology

Academic Responsibilities:

Graduate Advisor, 1982-1985; 1990-1992
Undergraduate Advisor, 1986-1988; 1989-1990
Member of Group in Soil Science, 1983-1991
Affiliated Faculty of Energy and Resources Group, 1989-

Professional Societies:

American Geophysical Union
British Geomorphological Research Group
Japanese Geomorphological Union
Geological Society of America
American Geomorphological Field Group

Professional Responsibilities:

Member, American Geophysical Union Hydrology Section Unsaturated Zone Committee, 1984-1992 and Erosion and Sedimentation Committee, 1984-
Chairman, Erosion and Sedimentation Committee of the American Geophysical Union Hydrology Section, 1988-1990
Member, Editorial Board, *Geology*, 1986-1988; 1990-1993
Member, National Science Foundation sponsored Japan-U.S. Cooperative Science Program on Mechanics of River Meanders, 1985-1987
Member, the Commission on Measurement, Theory and Application in Geomorphology, International Geographical Union, 1984-1988
Member, the Erosion Studies Scientific Advisory Committee of the California Department of Forestry and Fire Protection, 1986
Member, Editorial Board, *Catena*, 1986-1992
Editorial Board, Annual Reviews of Earth and Planetary Sciences 1992-1996
Deputy Editor, Water Resources Research, 1993-1996

Honors:

National Science Foundation, Presidential Young Investigator, 1985-1990
Gordon Warwick Award, British Geomorphological Research Group, 1986
Fellow, American Geophysical Union, 1992
Fellow, Geological Society of America, 1992
Wiley Award for paper published in Earth Surface Processes and Landforms in 1991 (with Steve Reneau) (given by the British Geomorphological Research Group)
Crosby Lecturer, MIT, 1994
Horton Award, American Geophysical Union, 1995

William E. Dietrich — Publications

1. Dietrich, W.E., 1975, Surface water resources of San Juan County, *in*, Geology and Water Resources of the San Juans, R.H. Russel (ed.), Water Supply Bulletin No. 46, Washington Department of Ecology, p. 59-125.
2. Dietrich, W.E. and T. Dunne, 1978, Sediment budget for a small catchment in mountainous terrain: Zeit. für Geomorph., Suppl. Bd. 29, p. 191-206.
3. Dunne, T., W.E. Dietrich and M. Brunengo, 1978, Recent and past erosion rates in semi-arid Kenya: Zeit. für Geomorph., Suppl. Bd. 29, p. 130-140.
4. Dunne, T., W.E. Dietrich and M. Brunengo, 1979, Rapid evaluation of soil erosion and soil lifespan in the grazing lands of Kenya: Proc. Internatl. Assoc. Hydrol. Sci., Canberra Symposium on the Hydrology of Areas of Low Precipitation, p. 421-428.
5. Dietrich, W.E., J.D. Smith and T. Dunne, 1979, Flow and sediment transport in a sand bedded meander: Jour. of Geol., v. 87, p. 305-315.
6. Dunne, T., W.E. Dietrich and M. Brunengo, 1980, Simple, portable equipment for erosion experiments under artificial rainfall: Jour. Agric. Engineer. Res., v. 25, p. 1-8.
7. Dunne, T. and W.E. Dietrich, 1980, Experimental study of Horton overland flow on tropical hillslopes: I. Soil condition, infiltration and frequency of runoff: Zeit. für Geomorph., Suppl. Bd. 35, p. 40-59.
8. Dunne, T. and W.E. Dietrich, 1980, Experimental study of Horton overland flow on tropical hillslopes: II. Hydraulic characteristics and hillslope hydrographs: Zeit. für Geomorph., Suppl. Bd. 35, p. 60-80.
9. Dunne, T., W.E. Dietrich, N. Humphrey and D. Tubbs, 1981, Geologic and geomorphic aspects of gravel supply in western Washington, *in*, Proc. on Salmon-spawning Gravels, J.J. Cassidy (ed.), Wash. State Water Res. Center, Report No. 39, p. 75-100.
10. Dietrich, W.E., T. Dunne, N.F. Humphrey and L.M. Reid, 1982, Construction of sediment budgets for drainage basins: *in* Sediment Budgets and Routing in Forested Drainage Basins, F.J. Swanson, R.J. Janda, T. Dunne, and D.N. Swanston (eds.), U.S.D.A. Forest Service General Technical Report PNW-141, Pacific Northwest Forest and Range Experiment Station, Portland, Oregon, p. 5-23.
11. Dunne, T. and W.E. Dietrich, 1982, Sediment sources in tropical catchments: Proc. Soil Erosion and Conservation in the Tropics, Amer. Soc. of Agronomy Symp., Colorado State University, August 1979, Spec. Publ., no. 43, p. 41-55.
12. Dietrich, W.E., 1982, Settling velocity of natural particles: Water Resources Research, v. 18, no. 6, p. 1615-1626.
13. Dietrich, W.E., 1982, Mechanics of a river meander: *in*, Field Trip Guidebook 1982 Conference of the American Geomorphological Field Group, Pinedale, Wyoming, L.B. Leopold (ed.), p. 18-29.
14. Dietrich, W.E., D. Windsor and T. Dunne, 1982, Geology, climate, and hydrology of Barro Colorado Island: *in*, Seasonal Rhythms and the Ecology of a Tropical Forest: Seasonal Rhythms and Long-term Changes, E.G. Leigh, Jr., A.S. Rand and D.M. Windsor (eds.), Smithsonian Institution Press, Washington, D.C., p. 21-46.
15. Dietrich, W.E. and J.D. Smith, 1983, Influence of the point bar on flow through curved channels, Water Resources Research v. 19, no. 5, p. 1173-1192.
16. Dietrich, W.E. and R. Dorn, 1984, Significance of thick deposits of colluvium on hillslopes: a case study involving the use of pollen analysis in the coastal mountains of Northern California, Jour. Geol., v. 92, p. 147-158.
17. Dietrich, W.E. and J.D. Smith, 1984, Processes controlling the equilibrium bed morphology in river meanders, in: Rivers '83: Proceedings of a Specialty

Conference on River Meandering, October, 1983; Am. Soc. Civ. Engineers, p. 759-769.
18. Dietrich, W.E., J.D. Smith, and T. Dunne, 1984, Boundary shear stress, sediment transport and bed morphology in a sand-bedded river meander during high and low flow, in: Rivers '83: Proceedings of a Specialty Conference on River Meandering, October, 1983; Am. Soc. Civ. Engineers, p. 632-639.
19. Dietrich, W.E. and J.D. Smith, 1984, Bedload transport in a river meander, member, p. 1355-1380.
20. Reneau, S.L., W.E. Dietrich, C.J. Wilson, and J.D. Rogers, 1984, Colluvial deposits and associated landslides in the northern S.F. Bay Area, California, USA, Proceedings IV International Symposium on Landslides, Toronto, 1984, pp. 425-430.
21. Dietrich, W.E. and J. Gallinatti, 1991, Fluvial geomorphology, in: Field Experiments and Measurement Programs in Geomorphology, O. Slaymaker (ed.), A.A. Balkema, Rotterdam, p.169-229.
22. Dietrich, W.E., C.J. Wilson and S.L. Reneau, 1986, Hollows, colluvium and landslides in soil-mantled landscapes, in: Hillslope Processes, Sixteenth Annual Geomorphology Symposium, A. Abrahams (ed.), Allen and Unwin, Ltd., p. 361-388.
23. Higgins, C.G., D.R. Coates, V.R. Baker, W.E. Dietrich, T. Dunne, E.A. Keller, R.M. Norris, G.G. Parker Sr., M. Pavich, T.L. Péwé, J.M. Robb, J.D.Rogers, and C.E. Sloan, 1988, Landform development, Chapter 42 in The Geology of North America, v. O-2, *Hydrogeology, Geological Society of America*, p. 383-400.
24. Reneau, S.L., W.E. Dietrich, R.I. Dorn, C.R. Berger, and M. Rubin, 1986, Geomorphic and paleoclimatic implications of latest Pleistocene radiocarbon dates from colluvium-mantled hollows, California, Geology, v. 14, p. 655-658.
25. Reneau, S.L. and W.E. Dietrich, 1987, The importance of hollows in debris flow studies, in: Debris Flows/Avalanches: Process, Recognition and Mitigation, Reviews in Engineering Geology, Volume VII, J.E. Costa and G.F. Wiezcorek (eds.), Geological Society of America, p. 165-180.
26. Brimhall, G.H. and W.E. Dietrich, 1987, Constitutive mass balance relations between chemical composition, volume, density, porosity, and strain in metasomatic hydrochemical systems: Results on weathering and pedogenesis, Geochimica et Cosmochima Acta, v. 51, no. 3, p. 567-587.
27. Dietrich, W.E., 1987, Mechanics of flow and sediment transport in river bends, in: River Channels: Environment and Process, K.S. Richards (ed.), Institute of British Geographers Special Publication No. 18, Basil Blackwell, Inc., p. 179-227.
28. Reneau, S.L. and W.E. Dietrich, 1987, Size and location of colluvial landslides in a steep forested landscape, Proc. Int. Symp. on Erosion and Sedimentation in the Pacific Rim, 3-7 August 1987, Corvallis, Ore., Int. Assoc. Hydrological Sciences Bull., Pub. no. 165, p. 39-48.
29. Wilson, C.J. and W.E. Dietrich, 1987, The contribution of bedrock groundwater flow to storm runoff and high pore pressure development in hollows, Proc. Int. Symp. on Erosion and Sedimentation in the Pacific Rim, 3-7 August 1987, Corvallis, Ore., Int. Assoc. Hydrological Sciences Bull., Pub. no. 165, p. 49-59.
30. Dietrich, W.E., S.L. Reneau and C.J. Wilson, 1987, Overview: "Zero-order basins" and problems of drainage density, sediment transport and hillslope morphology, Proc. Int. Symp. on Erosion and Sedimentation in the Pacific Rim, 3-7 August 1987, Corvallis, Ore., Int. Assoc. Hydrological Sciences Bull., Pub. no. 165, p. 27-37.

31. Whiting, P.J., W.E. Dietrich, L.B. Leopold, T.G. Drake, and R.L. Shreve, 1988, Bedload sheets in heterogeneous sediment, Geology, v. 16, p. 105-108.
32. Drake, T.G., R.L. Shreve, W.E. Dietrich, P.J. Whiting, and L.B. Leopold, 1988, Bedload transport of fine gravel observed by motion-picture photography, Journal of Fluid Mechanics, v. 192, p. 193-217.
33. Brimhall, G.H, C.J. Lewis, J.J. Ague W.E. Dietrich, J. Hampel, T. Teague, and P. Rix, 1988, Metal enrichment in bauxite by deposition of chemically-mature eolian dust, Nature, v. 333, p. 819-824.
34. Reneau, S.L., W.E. Dietrich, M. Rubin, D.J. Donahue, and J.T. Jull, 1989, Analysis of hillslope erosion rates using dated colluvial deposits, Journal of Geology, v. 97, p. 45-63.
35. Dietrich, W.E. and P.J. Whiting, 1989, Boundary shear stress and sediment transport in river meanders of sand and gravel, in S. Ikeda and G. Parker (Eds.), River Meandering, American Geophysical Union Water Resources Monograph 12, p. 1-50.
36. Montgomery, D.R., and W.E. Dietrich, Where do channels begin?, 1988, Nature, v. 336, p. 232-234.
37. Montgomery, D., and W.E. Dietrich, 1989, Channel initiation, drainage density and slope, Water Resources Research, v. 25, no. 8, p. 1907-1918.
38. Dietrich, W.E., J.W. Kirchner, H. Ikeda, and F. Iseya, 1989, Sediment supply and the development of the coarse surface layer in gravel-bedded rivers, Nature, v. 340, no. 6230, p. 215-217.
39. Wilson, C.J., Dietrich, W.E and T.N. Narasimhan,1989, Predicting high pore pressures and saturation overland flow in unchannelled hillslope valleys, Hydrology and Water Resources Symposium, Institution of Engineering Australia, p.392-396.
40. Reneau, S.L. and W.E. Dietrich, 1990, Depositional history of hollows on steep hillslopes, coastal Oregon and Washington, National Geographic Research, v. 6, no. 2, p. 220-230.
41. Kirchner, J., W.E. Dietrich, F. Iseya,, and H. Ikeda, 1990, The variability of critical boundary shear stress, friction angle, and grain protrusion in water-worked sediments, Sedimentology, v. 37, p. 647-672.
42. Reneau, S.L., W.E. Dietrich, D.J. Donahue, and A.J.T. Jull, 1990, Late Quaternary history of colluvial deposition and erosion in hollows, Central California Coast Ranges, Geological Society of America Bulletin, v. 102, no. 7, p. 969-982.
43. Dietrich, W.E., 1989, Slope morphology and erosion processes, in C. Wahrhaftig and D. Sloan (Eds.), Geology of San Francisco and Vicinity, Field Trip Guidebook T105, American Geophysical Union, p. 38-40.
44. Wilson, C. J., S. L. Reneau, and W. E. Dietrich, 1989, Hydrologic and erosional processes in hollows, Lone Tree Creek, Marin County, California, in W. M. Brown, III, (ed.), Landslides in Central California, Field Trip Guidebook T381, American Geophysical Union, p. 75-90.
45. Dietrich, W. E. and T. Dunne, 1993, The channel head, *in* K. Beven and M. J. Kirkby (Eds.), Channel Network Hydrology, J. Wiley and Sons, p. 175-219.
46. Whiting, P. J., and W. E. Dietrich,1991 Convective accelerations and boundary shear stress over a channel bar, Water Resources. Research,v. 27, no.5, p.783-796.
47. Whiting, P. J., and W. E. Dietrich, 1990, Boundary shear stress and roughness over mobile alluvial beds, Am. Soc. Civ. Eng., J. Hydraul. Eng., V.116 (12), p.1495-1511.
48. Reneau, S.L. and W.E. Dietrich, 1991, Erosion rates in the southern Oregon Coast Range: evidence for an equilibrium between hillslope erosion and sediment yield, Earth Surface Processes and Landforms, vol. 16, p.307-322.

49. Buffington, J.L., W.E. Dietrich and J. Kirchner, 1992, Friction angle measurements on a naturally formed gravel streambed: implications for critical boundary shear stress, Water Resources Research, Vol. 28, No.2, p.411-425.
50. Montgomery, D.R. and W.E. Dietrich, 1992, Channel initiation and the problem of landscape scale, Science, V.255, p.826-830.
51. Brimhall, G. H, Chadwick, O.A., Lewis, C.J., Compston, W., Dietrich, W.E., Power, M.E., Hendricks, D. and Bratt, J., 1992, Deformational mass transport and invasive processes in soil evolution, Science V. 255, p.695-702.
52. Dietrich, W.E., C.J. Wilson, D.R. Montgomery, J. McKean, and R. Bauer, 1992, Erosion thresholds and land surface morphology, Geology, v. 20, p. 675-679.
53. Monaghan, M.C., J. McKean, W.E. Dietrich and J. Klein, 1992, ^{10}Be Chronometry of bedrock-to-soil conversion rates, Earth Planet. Sci. Lett., v. 111, p. 483-492.
54. Seidl, M.A. and W.E. Dietrich, 1992, The problem of channel erosion into bedrock, *in* K.H. Schmidt and J. de Ploey (Editors), Functional geomorphology: landform analysis and models, Catena Supplement 23, p. 101-124.
55.Dietrich, W.E., C.J. Wilson, D.R. Montgomery, and J. McKean, 1993, Analysis of erosion thresholds, channel networks and landscape morphology using a digital terrain model, J. Geology, Vol. 101, No.2, p.161-180.
56.McKean, J. A., W.E. Dietrich, R.C Finkel, J.R. Southon, and M.W. Caffee, 1993, Quantification of soil production and downslope creep rates from cosmogenic ^{10}Be accumulations on a hillslope profile, Geology,v.21, p. 343-346.
57. Whiting, P. J. and W.E. Dietrich, 1993, Experimental constraints on bar migration through bends: implications for meander wavelength selection, Water Resources Research, vol. 29, no. 4, p.1091-1102.
58. Montgomery, D. R. and W.E. Dietrich, 1994, A physically-based model for topographic control on shallow landsliding, Water Resources Research, vol.30,no.4, p.1153-1171..
59. Booker, F.A., W.E. Dietrich and L.M. Collins, 1993, Runoff and erosion after the Oakland Firestorm: expectations and observations, California Geology, volume 46, number 6, p.159-173.
60. Whiting, P.J. and W.E. Dietrich, 1993, Experimental studies of bed topography and flow patterns in large-amplitude meanders: 1. Observations, Water Resources Research, vol. 29, no.11, p. 3605-3614.
61. Whiting, P.J. and W.E. Dietrich, 1993, Experimental studies of bed topography and flow patterns in large-amplitude meanders: 2. Mechanisms, Water Resources Research, vol 29, no.11, p.3615-3622.
62. Day, G.M., W.E. Dietrich, S.C. Apte, G.E. Batley, and A. J. Markham, 1993, The fate of mine-derived sediments deposited on the middle Fly River flood-plain of Papua New Guinea, in R. J. Allan and J.O. Nriagu (Editors), International Conference on Heavy Metals in the Environment, Volume 1, CEP Consultants, Ltd., Edinburgh, UK, p. 423-426.
63 Montgomery, D.R. and W.E. Dietrich, 1994, Landscape dissection and drainage area-slope thresholds, in Process Models and Theoretical Geomorphology', edited by M.J. Kirkby, John Wiley and Sons, p.221-246.
64. Howard, A.D., W. E. Dietrich, and M.A. Seidl, 1994, Modeling fluvial erosion on regional to continental scales, Journ. of Geophysical Res., vol. 99, No. B7, 13,971-13,986.
65 Seidl, M. A., Dietrich, W. E., Kirchner, J. W., 1994, Longitudinal profile development into bedrock: an analysis of Hawaiian channels, J. Geology, v. 102, p. 457-474.
66 Dietrich, W.E., Reiss, R., Hsu, M., and Montgomery, D.R., 1995, A process-based model for colluvial soil depth and shallow landsliding using digital elevation data, Hydrological Processes, Vol. 9, 383-400.

67 Montgomery, D.R. and W.E. Dietrich, 1995, Hydrolgic processes in a low-gradient source area, Water Resources Research, v. 31, no. 1, p. 1-10.
68. Power, M.E., A. Sun, G. Parker, W.E. Dietrich and J. T. Wootton, 1995, Hydraulic food-chain models, Bioscience, v. 45, No.3, p.159-167.
69. Ligon, F. K., W. E. Dietrich, and W. J. Trush, 1995, Downstream ecological effects of dams: a geomorphic perspective, Bioscience, Vol. 45, No. 3, p. 183-192.
70. Power, M.E., G. Parker, W.E. Dietrich, and A. Sun, 1995, How does floodplain width affect floodplain river ecology? A preliminary exploration using simulations, Geomorphology, v.13, p.310-318.
71 Rinaldo, A., Dietrich, W.E., Rigon, R., Vogel, G. K., Rodriguez-Iturbe, I., 1995, Geomorphological sigantures of climate, Nature, v. 374, p. 632-635.
72.Prosser, I.P., and W.E. Dietrich, 1995, Field experiments on erosion by overland flow and their implication for a digital terrain model for channel initiation, Water Resources Research, vol. 31, no. 11, p. 2867-2876.
73. Prosser, I. P., W. E. Dietrich, and J. Steveson, 1995, Flow resistance and sediment transport by concentrated overland flow in a grassland valley, Geomorphogy, v.13, p. 71-86
74. Power, M. E., W. E. Dietrich, and K. O. Sullivan, in press, Experiment, observation and inference in river and watershed investigations, in Resetarits, W.J. and J. Berando, Editor, Issues and perspectives in experimental ecology, Oxford University Press
75 Dietrich, W.E., G. Day and G. Parker, in press, The Fly River, Papua New Guinea: inferences about river dynamics, floodplain sedimentation and fate of sediment, in A. Miller and A. Gupta (edt), Varieties of Fluvial Form, J. Wiley.
76. Anderson, S. A. , W. E. Dietrich, R. Torres, D.R. Montgomery and K. M. Loague ,1997, Concentration-discharge relationships in runoff from a steep, unchanneled catchment, Water Resources Research, vol. 33, no. 1, p. 211-225.
77. Power, M. E., W. E. Dietrich, and J. C. Finlay, in press, Dams and donwstream aquatic biodiversity: potential food web consequences of hydorlogic and geomorphic change, Environmental Management.
78. Montgomery, D.R., W. E. Dietrich, R. Torres, S. P. Anderson and J. T. Heffner, 1997, Hydrologic response of a steep unchanneled valley to natural and applied rainfall, Water Resources Research, vol. 33, no.1, p. 91-109.
79. Montgomery, D. R. W. E. Dietrich and K. Sullivan, in press, The role of GIS in watershed Analysis
80. Dietrich, W. E. and D. R. Montgomery, in press, Hillslopes, Channels and landscape Scale, In G. Sposito (edt) Scale dependence and Scale Invariance in Hydrology, Cambridge University Press.
81. MacDonald, L.H., D. M. Anderson,, and W. E. Dietrich, in press, Paradise Threatened: Land use and erosion on St. John, U.S. Virgin Islands, Environmental Management.
82. Heimsath, A. H., W. E. Dietrich, K. Nishiizumi, and R. C. Finkel, 1997, The soil production function and landscape equilibrium, Nature - July 24 issue.

Richard R. Harris
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Education:

B.S., University of California, Berkeley, 1974 (Forest Resource Management)
M.L.A., University of California, Berkeley, 1976 (Landscape Architecture)
Ph.D., University of California, Berkeley, 1985 (Wildland Resource Science)

Experience:

Associate Cooperative Extension Forestry Specialist (Forestry Program Leader), University of California, Berkeley, Department of Environmental Science, Policy and Management, 1991-present

Associate Cooperative Extension Forestry Advisor, University of California Cooperative Extension, Humboldt/Del Norte Counties, 1988-1991

Independent Consulting Ecologist, 1987-1988

Post Doctoral Research Ecologist, Oregon State University, Department of Forest Science, Corvallis, 1986-1987

Assistant Professor of Land Use, University of Wisconsin, Department of Plant and Earth Science, River Falls, 1984-1986

Vice President and Manager of Northern California Operations, LSA Inc., Consulting Environmental Planners, Berkeley, CA, 1977-1984

Lecturer, University of California, Departments of Conservation and Resource Studies and Landscape Architecture, Berkeley, 1977-1979, 1983-1984

Planner, County of Marin, CA and City of Novato, CA, 1973-1977

Recent Professional Highlights:

President-elect, Watershed Management Council; 1997

Development and presentation of workshops on forest monitoring, forest management and stewardship; development of life-long learning curriculum; Forest Stewardship Program, State of California; 1996-present

Development of basic curriculum for ecosystem science and management, tailored for natural resource workers on Indian Reservations; content of the curriculum blends traditional American Indian ecological knowledge with western scientific knowledge; 1995

Development and testing of a multi-scale, quantitative decision analysis procedure for selecting sites for riparian restoration; funded by U.S. Environmental Protection Agency, Wetlands Research Program; 1991-1994

Chair, Watershed Management Council Symposium on Watershed Restoration, Ashland, OR; 1994

Manager, Hoopa Valley Tribal Forestry Program (under cooperative agreement between the Hoopa Valley Tribe and the University of California); 1993

Member, California Board of Forestry team preparing a Habitat Conservation Plan for the northern spotted owl on private lands in California; 1991-1992

RICHARD R. HARRIS

PUBLICATIONS (1985-PRESENT)

CODES:
- A Refereed Research Articles
- B Book Chapters and Reviews
- C Non-refereed Research Articles
- D Abstracts for Oral Presentations and Posters
- E Books
- F Popular and Miscellaneous

F 1. 1985 Harris, R.R. 1985. Relationships between vegetation and fluvial geomorphology at Cottonwood Creek, California. Ph.D. Dissertation, Department of Forestry and Resource Management, University of California, Berkeley, CA. 329 p.

A 2. 1985 Harris, R.R., R.J. Risser and C.A. Fox. 1985. A method for evaluating streamflow discharge-plant species occurrence patterns of headwater streams. p. 97-90. In: Riparian Ecosystems and their Management; Reconciling Conflicting Uses. Proceedings of the First North American Riparian Conference, 16-18 April, 1985, Tucson, AZ. USDA-Forest Service Gen. Tech. Rep. RM-120.

D 3. 1985 Risser, R.J. and R.R. Harris. 1985. Mitigation for impacts to riparian vegetation on regulated headwater streams. Paper presented at Third International Symposium on Regulated Streams. 4-8 August, 1985, University of Alberta, Edmonton, Alberta, Canada.

A 4. 1986 Harris, R. R. 1986. Occurrence patterns of riparian plants and their significance to water resource development. Biological Conservation 38:273-286.

D 5. 1987 Harris, R.R. and J.E. Means. 1987. Productivity and growth of Douglas-fir stands in an Oregon Cascades stream valley. Paper presented at 1987 Annual Meeting, Oregon Society of American Foresters and Oregon Chapter of the Wildlife Society, 20-22 May, 1987, Ashland, OR.

A 6. 1987 Harris, R.R. 1987. Impacts of hydroelectric development on montane riparian forests of California. pp. 21-30 In: T. Fujimori and M. Kimura (eds.). Human impacts and management of mountain forests. Forestry and Forest Products Research Institute, Ibaraki, Japan.

A 7. 1987 Harris, R.R., Fox, C.A. and R.J. Risser. 1987. Impacts of hydroelectric development on riparian vegetation in the Sierra Nevada region, California, USA. Environmental Management 11:519-527.

A 8. 1987 Harris, R.R. 1987. Occurrence of vegetation on geomorphic surfaces in the active floodplain of a California alluvial stream. American Midland Naturalist 118:393-405.

A 9. 1988 Harris, R.R. 1988. Associations between stream valley geomorphology and riparian vegetation as a basis for landscape analysis in the eastern Sierra Nevada, California, USA. Environmental Management 12:219-228.

F 10.1989 Harris, R.R. 1989. Summary of the workshop on assessing cumulative impacts of timber operations. 30 January-3 February, 1989, Fort Bragg, CA. University of California Cooperative Extension. Eureka, CA. 13 pp.+ app.

F 11.1989 Harris, R.R. (ed.). 1989. Harvesting trees while retaining our fish: a challenge we can meet. Proceedings of the fifteenth annual conference of the Humboldt Chapter, American Fisheries Society, Scotia, CA 22 April, 1989. University of California Cooperative Extension, Eureka, CA. 14 pp.+ app.

A 12.1989 Harris, R.R. 1989. Riparian communities of the Sierra Nevada, CA and their environmental relationships. p. 393-399. In: Proceedings of the California Riparian Systems Conference: Protection, Management and Restoration for the 1990s. Davis, CA. 22-24 September, 1988. USDA-Forest Service Gen. Tech. Rep. PSW 110.

B 13.1990 Risser, R.J. and R.R. Harris. 1990. Mitigating impacts to riparian vegetation on western montane streams. Chapter 9 In: J.A. Gore (ed.). Alternatives in regulated flow management. CRC Press, Inc., Boca Raton, FLA.

D 14.1990 Harris, R.R., G. Nakamura, G. Blomstrom, P. Abbott, J. Biondini and R. Vigil. 1990. Status report: integrated resource management planning on the Hoopa Valley Reservation, CA. p. 239-260. In: Proceedings of the 14th Annual National Indian Timber Symposium. Cherokee, NC. 3-6 April 1990. Intertribal Timber Council, Vancouver, WA.

D 15.1991 Harris, R.R. 1991. Integrated resource management on the Hoopa Valley Indian Reservation: a case study in collaboration and self-determination. Poster presented at the Society of American Foresters National Convention. San Francisco, CA. 4-7 August, 1991.

C 16.1991 Harris, R.R. 1991. Hoopa Valley Indian Reservation timber inventory analysis. Report to the Hoopa Valley Tribal Council. Dept. of Forestry and Resource Management. University of California, Berkeley. 48 p.+ app.

F 17.1991 Harris, R.R. 1988-91. North coast forest echoes. Quarterly newsletter of the Extension Forestry Program, Humboldt-Del Norte Counties. Vol. 1-3.

F 18.1992 Harris, R.R. 1991-92. North coast biodiversity news. Quarterly newsletter of the Extension Forestry Program. Dept. of Forestry and Resource Management. University of California, Berkeley. Issues 1-9.

E 19.1992 Harris, R.R. and D.E. Erman (Technical Coordinators) and H.M. Kerner (Editor). 1992. Proceedings of symposium on biodiversity of northwestern California, October 28-30, 1991, Santa Rosa, CA University of California, Wildland Resources Center Report No. 29, Berkeley, CA. 316 p.

F 20.1992 Tuazon, R., J. DePree, J. Gaffin, R.R. Harris, R. Johnson, G. Murray, L. Roush, W. Whitlock and R. Zwanziger. 1992. Northern spotted owl habitat conservation plan for private forestlands in California. Report to California Board of Forestry, Sacramento, CA. 61 p. + app.

C 21.1994 Harris, R.R. 1994. Documentation of the use of best professional judgment in selecting sites for riparian wetlands restoration: a case study in the San Luis Rey watershed. Final Report to US Environmental Protection Agency, Research Cooperative Agreement CR 819510-01-0. 29 p. + app.

D 22.1994 Harris, R.R. 1994. Selecting stream reaches for evaluation of riparian restoration potential. Paper presented at 15th Annual Meeting, Society of Wetland Scientists, May 30-June 3, 1994, Portland, OR.

C 23.1994 LeBlanc, J. and R.R. Harris. 1994. Selecting sites for riparian restoration: summary of the process developed under cooperative agreement between the University of California and US Environmental Protection Agency. Final Report to US Environmental Protection Agency, Cooperative Agreement CR 819510-01-0. 12 p.

C 24.1994 Harris, R.R., L. Huntsinger, S. McCaffrey and P. Hopkinson. 1994. Use of geographical information systems versus manual techniques for map analysis in riparian restoration projects: a comparison. Final Report to US Environmental Protection Agency, Research Cooperative Agreement CR 819510-01-0. 26 p. + app.

F 25.1994 Harris, R.R. 1994. Sustainable forestry in Mexico. Natural Resources News 2 (1):1,3,8.

F 26.1994 Harris, R.R., and L. Huntsinger. 1994. Lessons on stewardship from the past and present. Natural Resources News 2 (2):1,3-4.

C 27.1994 Harris, R.R. 1994. Strategies for protecting, enhancing and restoring the riparian communities of the Noguera Ribagorcana natural area, Catalonia, Spain. Published by the Department of the Environment, Natural Heritage Program, Government of Catalonia, Barcelona, Spain. 25 p. + maps (in Catalan).

F 28.1994 Harris, R.R. and F. Giro. 1994. A land without wild rivers: comments on a trip to the Catalonian region of Spain. Published by the Department of the Environment, Natural Heritage Program, Government of Catalonia, Barcelona, Spain. 9 p (in Catalan).

C 29.1994 Harris, R.R. 1994. Riparian restoration in the context of conservation planning at the watershed scale. Paper presented at a Workshop on Riparian Restoration in the Upper Arkansas Basin, US Environmental Protection Agency, Denver, CO. 10 p.

F 30.1994 Harris, R.R. 1994. Silvicultura sostenible en Mexico. Foro Forestal 1 (2):8 (in Spanish).

A 31.1995 Harris, R.R., Blomstrom, G. and G. Nakamura. 1995. Tribal self-governance and forest management at the Hoopa Valley Indian Reservation, Humboldt County, CA. American Indian Culture and Research Journal 19:1-38.

A 32.1995 Harris, R.R. 1995. Drainage basin analysis and conservation planning for riparian vegetation. P. 27-36 IN: Harris, R.R., R. Kattlelmann, H. Kerner and J. Woled (editors). 1995. Watersheds '94 Respect, Rethink and Restore, Proceedings of the Fifth Biennial Watershed Management Conference, Ashland, OR, 16-18 November, 1994 University of California, Water Resources Center Report No. 86, Davis, CA.

E 33.1995 Harris, R.R., R. Kattelmann, H. Kerner and J. Woled (editors). 1995. Watersheds '94 Respect, Rethink and Restore, Proceedings of the Fifth Biennial Watershed Management Conference, Ashland, OR, 16-18 November, 1994, University of California, Water Resources Center Report No. 86, Davis, CA. 150 p.

E 34.1995 Harris, R.R. 1995. Ecosystems and Indian people: a curriculum on ecosystem science and management for Indian people working in natural resource management. Volume 1: Syllabus and Lecture Notes. Department of Environmental Science, Policy, and Management, Cooperative Extension Forestry, University of California, Berkeley. 160 p.

Richard R. Harris

E 35.1995 Harris, R.R. (editor) 1995. Ecosystems and Indian people: a curriculum on ecosystem science and management for Indian people working in natural resource management. Volume 2: Assigned Readings. Department of Environmental Science, Policy, and Management, Cooperative Extension Forestry, University of California, Berkeley. 667 p.

D 36.1995 Harris, R.R. and C. Olson. 1995. Multiscale planning for riparian restoration on streams of the western US. Paper presented at Annual Conference, Society for Ecological Restoration, 14-16 September, 1995, Seattle, WA.

D 37.1995 Harris, R.R. 1995. An ecosystem science curriculum for Indian natural resource workers. Paper presented at the Eleventh Annual California Indian Conference, 6-8 October, 1995, University of California, Los Angeles, CA.

D 38.1995 Nakamura, G.M. and R.R. Harris. 1995. Natural resource inventory of Indian-owned public domain allotments in California. Paper presented at the Eleventh Annual California Indian Conference, 6-8 October, 1995, University of California, Los Angeles CA.

A 39. 1995 Harris, R.R. 1996. Forest management in a resource-dependent American Indian community. P. 97-111 IN: Sokolow, A.D. (ed.). 1996. Community and university: case studies and commentary on University of California Cooperative Extension interventions. California Communities Program, University of California, Davis, CA; University of California Division of Agricultural and Natural Resources Publication 3371.

A 40. Means, J.E., R.R. Harris, T.E. Sabin and C.N. McCain. 1996. Spatial variation in productivity of Douglas-fir stands on a valley floor in the western Cascades range, Oregon. Northwest Science 70:201-211.

A 41. Harris, R.R., P. Hopkinson, S. McCaffrey and L. Huntsinger. 1997. Use of geographical information systems versus manual techniques for map analysis in riparian restoration projects: a comparison. Journal of Soil and Water Conservation 52:140-145.

D 42. Harris, R.R., J. Martin and E. Sam. 1997. Tribal visions: the Navajo Nation forest management plan. Paper presented at the 21st Annual Intertribal Timber Symposium, 2-6 June, 1997, Menominee Nation, Keshena, WI.

A 43. Olson, C. and R.R. Harris. In press. Applying a two-stage system to prioritize riparian restoration at the San Luis Rey River, San Diego County, California. Restoration Ecology.

A 44. Harris, R.R. and C. Olson. In press. Two-stage system for prioritizing riparian restoration at the stream reach and community scales. Restoration Ecology.

A 45. Harris, R.R. In press. No wild rivers. Wild Earth

A 46. Harris, R.R. and R. Cox. In press. Curriculum on ecology and natural resource management for Indian natural resource workers. American Indian Culture and Research Journal 21(3).

A 47. Nakamura, G.M. and R.R. Harris. In press. Natural resource inventory of Indian-owned public domain allotments in California. American Indian Culture and Research Journal 21(3).

F 48. Harris, R.R., T.E. Lisle and R. Ziemer (compilers). In press. Aftermath of the 1997 flood: summary of a workshop. USDA-Forest Service, Watershed Analysis Center, 8-9 April, 1997, McKinleyville, CA. Watershed Management Council Networker 7(2):

A 49. Harris, R.R. and C. Olson. Submitted. Vegetation analysis for riparian community restoration. Biological Conservation.

A 50. Harris, R.R., Nakamura, G.M. and G. Blomstrom. Submitted. Computerized forest planning in Indian Country: the Hoopa Valley case study. Journal of Forestry.

Curriculum Vitae

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EDUCATION

THE JOHNS HOPKINS UNIVERSITY - PhD, Geography and Environmental Engineering 1988.

UNIVERSITY OF CALIFORNIA AT SANTA CRUZ - MS, Earth Sciences 1982

PRINCETON UNIVERSITY - AB *cum laude*, Geology 1978.

PROFESSIONAL EXPERIENCE

UNIVERSITY OF CALIFORNIA AT BERKELEY

Associate Professor of Environmental Planning, 1994 to present, and Associate Professor of Geography, 1996-present. Assistant Professor of Environmental Planning, 1988-1994. Courses: Environmental Geology for Planners, Hydrology for Planners, Restoration of Rivers and Streams, Ecological Analysis in Urban Design, Introduction to Environmental Sciences.

WHITE MOUNTAIN RESEARCH STATION

Research Scientist, 1989-1993 (33% appointment).

OAK RIDGE NATIONAL LABORATORY

Graduate Research Participant, Environmental Sciences Division, 1985-1987.

US GEOLOGICAL SURVEY

Hydrologic Field Assistant, 1985.

THE JOHNS HOPKINS UNIVERSITY

Teaching Assistant in Geomorphology, 1984.

UNIVERSITY OF CALIFORNIA AT SANTA CRUZ

Teaching Assistant in Environmental Geology, 1979; *Geomorphology*, 1980, 1981; and *Alternative Energy and Appropriate Technology*, 1980; *Research Assistant in EPA-supported hydrologic studies*, 1980.

PRINCETON UNIVERSITY

Research Assistant in NSF-supported study developed oceanographic laboratory exercises, 1978-1979.

PROFESSIONAL AFFILIATIONS

American Fisheries Society
American Geophysical Union
American Water Resources Association
Council of Educators in Landscape Architecture
International Association for Scientific Hydrology
Watershed Management Council

AWARDS AND FELLOWSHIPS

Pacific Gas and Electric Company-UC Wildlands Research Center,
"Award for Excellence in Wildlands Research, 1993. (for studies on Trinity River)

Oak Ridge Associated Universities, Graduate Research Participation Fellowship, 1985-1986; 1986-1987.
The Johns Hopkins University Fellowship, 1982-1983.
Middle Atlantic Division, American Assn. of Geographers, "Outstanding Graduate Student of the Year," 1983.
Sigma Xi, elected to membership, June 1978.
New Jersey Assn. of Broadcasters, First place in Public Affairs 1979 for radio documentary, "Einstein, the Man Behind the Mind," co-produced with Judi Muller, WHWH, Princeton, N.J.

SERVICE AS PEER-REVIEWER

National Science Foundation
Foundation for Research, Science, and Technology, New Zealand
Council of Educators in Landscape Architecture
University of California Press
California Water Resources Center
Utah Water Resources Center
Aquatic Conservation
Biological Conservation
Canadian Journal of Fisheries and Aquatic Sciences
Conservation Biology
Environmental Management
Journal of Hydraulic Engineering
North American Journal of Fisheries Management
Water Resources Research

FUNDED RESEARCH PROJECTS AT UNIVERSITY OF CALIFORNIA

Assessment of Geomorphic and Sediment-Related Issues in Jamison Creek, Plumas-Eureka State Park. ($24,000 study funded by the California Department of Parks and Recreation, 1988-1990)

Management of Coarse Sediment in Regulated Rivers. ($35,000 study funded by University of California Water Resources Center, 1989-1991)

Development of Debris Management Plan for General Creek, Sugar Pine Point State Park. ($8,000 study funded by the California Department of Parks and Recreation, 1989-1990)

Initial studies - Upper Truckee River Marsh Wildlife Enhancement and SEZ (Stream Environment Zone) Restoration. (responsible for hydrologic and geomorphic aspects of $150,000 study funded by the California Tahoe Conservancy, 1989-1991)

Empirically-Verified Flushing Flow Recommendations for the Trinity River below Lewiston Dam. ($87,000 study funded by the US Fish and Wildlife Service, 1991-1994)

Evaluation of Impacts of a Hydroelectric Project on the Riparian, Aquatic, and Recreational Resources of the North Fork Stanislaus River within Calaveras-Big Trees State Park. ($48,000 study funded by the California Department of Parks and Recreation, 1990-1992)

Debris Flow Hazards along the Paparoa Range Front, West Coast, South Island, New Zealand. ($10,000 study funded by the University of California at Berkeley Faculty Senate Committee on Research, 1990-1991)

Analysis of Sedimentation in Hat Creek Wild Trout Reach. ($40,000 study funded by the California Department of Fish and Game, 1991-1993)

Hydrological and Geomorphologic Investigations on Coyote Creek, Anza Borrego Desert State Park. ($25,000 study funded by the California Department of Parks and Recreation, 1992-1993)

Hydrological and Geomorphologic Analysis for Restoration Design, Jamison Creek, Plumas-Eureka State Park. ($65,000 study funded by the California Department of Parks and Recreation, 1993-1994)

Assessment of restoration success and restoration potential in floodplain gravel pits. ($37,000 study funded by California Water Resources Center, 1994-1996)

UNIVERSITY COMMITTEE SERVICE

Chancellor's Advisory Committee on Strawberry Creek, University of California, Berkeley. Chair, 1990-present.

Environmental Health and Safety Policy Committee, University of California, Berkeley. Ex-Officio Member, 1993-present.

Campus Environmental Coordinating Group. Member, 1992-1994.

Environmental Sciences Advisory Committee, University of California, Berkeley. Member, 1994-present.

Environmental Council, University of California, Berkeley. Member of Executive Committee, 1994-present.

Energy and Resources Group, University of California, Berkeley. Affiliated faculty, 1993 to present. Member Executive Committee, 1994-1996.

White Mountain Research Station Advisory Committee, member, 1995-present.

OTHER COMMITTEE SERVICE

Scott's Creek Technical Advisory Committee, Lake County Planning Department, Lakeport, California. Member, 1994-1995.

Trinity River Fisheries Restoration Technical Advisory Committee, US Fish and Wildlife Service, Weaverville, California, member 1995-present.

Los Vaqueros Watershed Technical Advisory Committee, Contra Costa Water District, member 1996.

CONSULTANCIES

1980-1983. Monterey Peninsula Water Management District, Monterey, California. Conducted studies of historical channel changes and downstream changes in baseflow in the Carmel River; designed and implemented data collection program in surface water hydrology, suspended and bedload sediment transport in Carmel River and seven tributaries.

1983. Office of Surface Mining, US Department of Interior. Mapped alluvial valley floors in Powder River Basin of Montana and Wyoming. (Subconsultant to Earth Resources Associates, Helena, Montana)

1986-1988. California Department of Fish and Game. Conducted analysis of historical channel stability and of spawning gravels on the Lower Yuba River. (Subconsultant to Philip Williams and Associates, San Francisco, and Beak Consultants, Sacramento)

1986. Oak Ridge National Laboratory, Oak Ridge, Tennessee. Conducted hydrologic and sediment-related studies on the Merced River for FERC Environmental Impact Study of El Portal hydroelectric project.

1986. Oroville-Wyandotte Irrigation District, California. Conducted studies of sediment-related problems on the South Fork Feather River and Slate Creek. (Subconsultant to EBASCO Environmental, Sacramento)

1986-1989. Yuba County Water Agency, Marysville, California. Conducted studies on characteristics and downstream transport of sediment sluiced from Our House Dam, Middle Yuba River. (Subconsultant to EBASCO Environmental, Sacramento)

1987-1991. California Department of Fish and Game. Conducted hydrologic, historical, channel stability, and spawning gravel analyses on Rush and Lee Vining Creeks, Mono County, and Battle Creek, Lassen County.

1988. Government of West Germany, GTZ (German Technical Cooperation Unit, Frankfurt). Developed terms of reference for environmental impact assessment of major water storage project on Nile River, under consideration for funding and construction by the Government of West Germany. (Subconsultant to Dr. Ing Peter Geldner, Karlsruhe)

1989-1990. California Department of Justice, Office of the Attorney General, Sacramento. Provided expert testimony regarding probable impacts of proposed instream gravel mine on Cottonwood Creek and provided expert testimony on coastal changes along the southern shore of Lake Tahoe.

1989-1990. Monterey Peninsula Water Management District, Monterey, California. Analyzed probable effects of reservoir alternatives on downstream channel geometry.

1990-1991. California State Water Resources Control Board. Provided evaluation of hydrologic issues relating to riparian vegetation management and enhancement in the Mono Basin for development of an EIR on water rights allocation in the basin. (Subconsultant to Jones and Stokes, Inc., Sacramento)

1990-1992. California Department of Transportation, Division of Structures. Conducted geomorphic analysis of channel processes and channel change on Stony Creek, Glenn County, to determine causes of bridge scour and for evaluation of countermeasures. (Subconsultant to San Diego State University Foundation)

1991. District Attorney, County of Monterey, California. Analyzed probable residence time in Wildcat Creek, Big Sur, for sediment eroded from illegal road.

1992-1993. California Department of Water Resources, Reclamation Board. Analyzed channel changes in the Sacramento River between Deer Creek and Stony Creek, provided geomorphic input into selection of solutions for repair of fish screens at intake structure for Glenn-Colusa Irrigation District. (Subconsultant to

HDR Engineering, El Dorado Hills, California)

1992-1993. Department of Planning, County of Humboldt, California. Provided guidance regarding evaluation of geomorphic and environmental impacts of instream aggregate extraction in the Mad and Eel Rivers and development of a comprehensive management plan.

1993. Oak Ridge National Laboratory, Oak Ridge, Tennessee. Conducted hydrologic, vegetative, and sediment-related studies on the Lower Mokelumne River for FERC Environmental Impact Study of Camanche Dam hydroelectric project.

1993-1994. California Department of Fish and Game, Sacramento. Provided expert testimony concerning flushing flow requirements for Rush Creek, Mono County, before the State Water Resources Control Board.

1994. Dun & Martinek, Eureka, California. Provided third-party review of technical documents concerning sediment transport, channel change, and management of gravel mining in the Russian River, Sonoma County.

1994-1995. Department of Planning, County of Yolo, California. Conducted geomorphic and historical channel analyses, provided guidance on management of instream and off-channel mining. (Subconsultant to Northwest Hydraulic Consultants, West Sacramento, California)

1994-1995. Oak Ridge National Laboratory, Oak Ridge, Tennessee. Evaluated geomorphic issues relevant to spawning gravels on the Lower Tuolumne River, California.

1995. California Environmental Law Project, San Francisco. Evaluated flood control project proposed for Murietta Creek, Riverside County, California. (with W.V.G Matthews)

1995. Monterey Peninsula Water Management District. Reviewed geomorphic and hydrologic analysis conducted for proposed wetland mitigation site at San Clemente Reservoir, Carmel River.

1996. Placer County Water Agency, Foresthill, California. Provided geomorphic analysis of flushing sediments released from South Fork Long Canyon Dam.

1996. Bureau of Land Management, Coeur d'Alene, Idaho. Provided reconnaissance-level geomorphic assessment and guidance for planning restoration projects on Pine Creek.

PEER-REVIEWED PUBLICATIONS

Kondolf, G.M., and W.V.G. Matthews. 1986. Transport of tracer gravels on a coastal California river. *Journal of Hydrology*, 85:265-280.

Kondolf, G.M., and R.R. Curry. 1986. Channel erosion along the Carmel River, Monterey County, California. *Earth Surface Processes and Landforms*, 11:307-319.

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Kondolf, G.M., G.F. Cada, M.J. Sale and T. Felando. 1991. Distribution of potential salmonid spawning gravels in steep, boulder-bed streams of the eastern Sierra Nevada. *Transactions of the American Fisheries Society*, 120:177-186.

Kondolf, G.M., and W.V.G. Matthews. 1991. Unmeasured residuals in sediment budgets: a cautionary note. *Water Resources Research*, 27:2483-2486.

Kondolf, G.M., and S. Li. 1992. The pebble count technique for quantifying surface bed material size in instream flow studies. *Rivers*, 3:80-87.

Charbonneau, R., and G.M. Kondolf. 1993. Land use change in California: Nonpoint source water quality impacts. *Environmental Management*, 17:453-460.

Kondolf, G.M., and M.G. Wolman. 1993. The sizes of salmonid spawning gravels. *Water Resources Research*, 29:2275-2285.

Kondolf, G.M., M.J. Sale and M.G. Wolman. 1993. Modification of gravel size by spawning salmonids. *Water Resources Research*, 29:2265-2274.

Kondolf, G.M., and Swanson, M.L. 1993. Channel adjustments to reservoir construction and instream gravel mining, Stony Creek, California. *Environmental Geology and Water Science*, 21:256-269.

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Wilcock, P.R., A.F. Barta, C.C. Shea, G.M. Kondolf, W.V. Matthews, and J. Pitlick. 1996. Observations of flow and sediment entrainment on a large gravel-bed river. *Water Resources Research*. 32(9):2897-2909.

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Kondolf, G.M. 1997. Application of the pebble count: reflections on purpose, method, and variants. *Journal of the American Water Resources Association (formerly Water Resources Bulletin)*. 33(1):79-87.

Kondolf, G.M. 1997. Hungry water: effects of dams and gravel mining on river channels. *Environmental Management*. 21: (in press)

Kondolf, G.M. Lessons learned from river restoration projects in California. *Aquatic Conservation*. (in review)

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Education

B.A., Brown University (Biology), Providence, Rhode Island, 1971
M.S., Boston University Marine Program (Biology), Woods Hole, Massachusetts, 1974
PhD., University of Washington (Zoology), Seattle, Washington, Dec. 1981
"The grazing ecology of armored catfish in a Panamanian stream"

Professional Experience

Visiting Assistant Professor, Division of Entomology and Parasitology, University of California, Berkeley, 1986-1987
Assistant Professor, Department of Zoology, and Integrative Biology, University of California, Berkeley, 1987-1992
Associate Professor, Department of Integrative Biology, University of California, Berkeley, 1992 - 1996
Professor, Department of Integrative Biology, University of California, Berkeley, 1996 - present

Faculty Manager, Angelo Coast Range Reserve, 1989 - present
Chair, Aquatic Ecology Section, Ecological Society of America, 1995-1996
Chair, University-Wide Natural Reserve System Advisory Committee, 1995-1998

Honors and Awards

Sigma Xi, 1971

Phi Beta Kappa, 1971

B.A., magna cum laude 1971

Summer student fellowships, Woods Hole Oceanographic Inst., 1972, 1973

Nobel summer fellowship, Smithsonian Tropical Res. Inst., 1976

Walter Rathbone Bacon Fellowship for Field Biology, Smithsonian Institution, 1978-80

National Science Foundation Dissertation Improvement award 1978-80 ($3300)

National Science Foundation award (Ecology panel), 1983-85: "Multi-level effects of an algae-grazing minnow (Campostoma anomalum) on north temperate streams (with Drs. W.J. Matthews and A.J. Stewart, Univ. Oklahoma ($60,000)

National Science Foundation supplementary award (Ecology panel), 1983-85: "Predators and algae-grazing minnows in north temperate streams: Does the kind of predator matter?" (with Drs. Matthews, Stewart, and R. Cashner) ($10,848)

Jasper Loftus-Hills Prize for Young Investigators, from the American Society of Naturalists, 1985

National Science Foundation Visiting Professorship for Women, 1986-1988: "The role of primary consumers in structuring communities of northern Californian streams ($145,265)

Junior Faculty Award, University of California, Berkeley, 1988

Water Resources Center (California) Award: 1988-90: "Seasonal and hydrologic controls of algal blooms in northern California rivers." ($52,600)

National Science Foundation award (Ecology panel), 1991-1993: "Productivity, plant biomass, and trophic interactions in rivers." ($192,097)

National Science Foundation award (Conservation Biology panel), 1991-1993: "Food web analysis of biodiversity: Application to algal-based river systems." ($100,000)

National Science Foundation award (Ecology panel) (1994-1996): "Disturbance and the structure of river food webs" (with J.T. Wootton and M.S. Parker, $300,000)

Water Resources Center (California) Award: 1993-1995. Effects of stream flow regulation and reduction of scouring floods on trophic transfer of biomass to fish in northern California rivers. ($37,220)

Fulbright Scholar 1994-1995

Teaching Interests

Community ecology, grazing, fish biology, freshwater ecology, food webs

Publications

Power, M.E. 1997. Estimating impacts of a dominant detritivore in a neotropical stream. Review for Trends in Ecology and Systematics 12: 47-49.

Wootton, J.T., M.E. Power, R.T. Paine and C. Pfister. 1997. Nutrients, El Nino Events, and Food Chain Processes in the Rocky Intertidal. Proc. National Academy of Sciences, in press.

Power, M.E., S.J. Kupferberg, G.W. Minshall, M.C. Molles and M.S. Parker. 1997. Sustaining Western Aquatic Food Webs. pp. 45-61 inW.C. Minckley (ed.) Aquatic Ecosystems Symposium, Tempe AZ. Report to the Western Water Policy Review Presidential Advisory Commission.

Power, M.E., W.E. Dietrich, and K.O. Sullivan. Experiment, observation, and inference in river and watershed investigations. In W.J. Resetarits and J. Bernardo, eds. Issues and perspectives in experimental ecology. Oxford Univ. Press, Oxford, UK, in press.

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Power, M.E., W.E. Dietrich, and J.C. Finlay. 1996. Dams and downstream aquatic biodiversity: Potential food web consequences of hydrologic and geomorphic change. Environmental Management 20: 887-895.

Power, M.E., D. Tilman, J. A. Estes, B.A. Menge, W.J. Bond, L.S. Mills, G. Daily, J.C. Castilla, J. Lubchenco, and R.T. Paine. 1996. Challenges in the quest for keystones. BioScience 46: 609-620.

Wootton, J.T., M.S. Parker and M.E. Power. 1996. The effect of disturbance on river food webs. Science 273: 1558-1560.

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Oksanen, T., M.E. Power and L. Oksanen. 1995. Habitat selection and consumer resources. American Naturalist 146: 565-583.

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Persson, L., J. Bengtsson, B.A. Menge and M.E. Power. 1995. Productivity and the structure and regulation of communities. pp. 396-434 in G.A. Polis and K.O. Winemiller (eds.) Food Webs: Integration of Patterns and Dynamics. Chapman and Hall, N.Y.

Power, M.E. and L. S. Mills. 1995. The Keystone Cops meet in Hilo. Trends in Evolution and Ecology 10: 182-184 (not peer reviewed)

Carpenter, S., T. Frost, L. Persson, M. Power, and D. Soto. 1995. Lakes and rivers. pp. 157-164 In H.A. Mooney and J. Lubchenco. SCOPE Global Biodiversity Assessment, UNEP. (not peer reviewed).

Kupferberg, S.J., J.C. Marks and M.E. Power. 1994. Effects of variation in natural algal and detrital diets on larval anuran (Hyla regilla) life history traits. Copeia 1994 (2): 446-457.

Matthews, W.J., B.C. Harvey and M.E. Power. 1994. Spatial and temporal patterns in the fish assemblages of individual pools in a midwestern stream (USA). Environmental Biology of Fishes 39: 381-397.

Wootton, J.T. and M.E. Power. 1993. Productivity, consumers, and the structure of a river food chain. Proc. Nat. Acad. Sci. USA 90: 1384-1387.

Power, M. E. 1992. Habitat heterogeneity and the functional significance of fish in river food webs. Ecology 73: 1675-1688.

Power, M. E. 1992. Top down and bottom up forces in food webs: do plants have primacy? Ecology 73: 733-746.

Power, M. E., J. C. Marks and M. S. Parker. 1992. Variation in the vulnerability of prey to different predators: Community-level consequences. Ecology 73: 2218-2223.

Power, M.E. 1992. Hydrologic and trophic controls of seasonal algal blooms in northern California rivers. Archivs fur Hydrobiologie 125: 385-410.

Brimhall, G.H., O.A. Chadwick, C.J. Lewis, W. Compston, I.S. Williams, K.J. Danti, W.E. Dietrich, M.E. Power, D. Hendricks, and J. Bratt. 1992. Deformational mass transport and invasive processes in soil evolution. Science 255: 695-702.

Power, M.E. 1991. Shifts in the effects of tuft-weaving midges on filamentous green algae. Amer. Midl. Nat. 125:275-285.

Power, M.E. 1990. Indirect effects of grazers at low population density: armored catfish, algae, and sediment. Ecology 71:897-904.

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Power, M.E., T.L. Dudley and S.D. Cooper. 1989. Grazing catfish, fishing birds, and attached algae in a Panamanian stream. Environ. Biol. Fishes 26: 285-295.

Feminella, J.W., M.E. Power, and V.H. Resh. 1989. Periphyton responses to grazing invertebrates and riparian canopy in three Northern California coastal streams. Freshw. Biol. 22:445-487.

Power, M.E., R.J. Stout, C.E. Cushing, P.P. Harper, F.R. Hauer, W.J. Matthews, P.B. Moyle, B. Statzner, and I.R. Wais de Badgen. 1988. Biotic and abiotic controls in river and stream communities. J. North Amer. Benthol. Soc. 7: 456-479.

Power, M.E., A.J. Stewart and W.J. Matthews. 1988. Grazer control of attached algae in an Ozark Mountain stream: Effects of short-term exclusion. Ecology 69: 1894-1989.

Matthews, W.J., A.J. Stewart and M.E. Power. 1988. Grazing fishes as components of North American stream ecosystems: effects of Campostoma anomalum. pp. 128-135 in W.J. Matthews and D.C. Heins (eds.) Ecology of North American stream fishes. Univ. Oklahoma Press, Norman, OK.

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Power, M.E. and A.J. Stewart. 1987. Disturbance and recovery of an algal assemblage following flooding in an Oklahoma stream. Amer. Midl. Nat. 117: 333-345.

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Power, M.E., W.J. Matthews and A.J. Stewart. 1985. Grazing minnows, piscivorous bass and stream algae: Dynamics of a strong interaction. Ecology 66: 1448-1456.

Power, M.E. 1984. Depth distributions of armored catfish: Predator-induced resource avoidance? Ecology 65: 523-528.

Power, M.E. 1984. Habitat quality and the distribution of algae-grazing catfish in a Panamanian stream. J. Anim. Ecol. 53: 357-374.

Power, M.E. 1984. The importance of sediment in the feeding ecology and social interactions of an armored catfish, Ancistrus spinosus. Environ. Biol. Fish. 10: 173-181.

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Power, M.E. 1983. Grazing responses of tropical freshwater fishes to different scales of variation in their food. Environ. Biol. Fish. 9: 103-115.

Moodie, G.E.E. and M. Power. 1982. The reproductive biology of an armored catfish, Loricaria uracantha, from Central America. Environ. Biol. Fish. 7: 143-148.

Power, M.E. and J.H. Todd. 1976. Effects of increasing temperature on social behavior in territorial groups of pumpkinseed sunfish, Lepomis gibbosus. Environ. Pollut. 10: 217-223.

Curriculum Vitae

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Australian citizen; US Permanent Resident
Date of Birth: March 14, 1943
Education: BSc(Hons) Melbourne 1965, PhD DipEd Monash 1969

Appointments:

1965-69 Tutor, Senior Tutor and Lecturer
Department of Mathematics, Monash University

1969-73 Lecturer, Department of Probability and
Statistics, University of Sheffield

1974-75 Associate Professor, Department of Mathematics
University of Western Australia

1975-82 Professor, Department of Mathematics
University of Western Australia
(Head of Department 1980-82)

1983-87 Chief, Division of Mathematics and Statistics
Commonwealth Scientific and Industrial Research
Organization (Australia)

1987- Professor, Department of Statistics,
University of California, Berkeley
(Chair, 1989-93)

1996- Adjunct Professor, School of Mathematical Sciences,
Australian National University

Membership of Professional Bodies:

Australian Mathematical Society
Statistical Society of Australia
Royal Statistical Society
American Statistical Association (Fellow)
Institute of Mathematical Statistics (Fellow)
Biometric Society
International Statistical Institute (Member)
Genetics Society of America
American Society of Human Genetics
Society of Molecular Biology and Evolution
American Association for the Advancement of Science (Fellow)

Current/Previous Memberships:

Australian Statistics Advisory Council (1983-87)
Board of Management, Australian Institute of Criminology (1983-87)
Board of Directors, SIROMATH Pty Ltd (1983-87)
Genome Study Section, National Institutes of Health (1995-1998)

Recent offices held in professional bodies:

Western Northern American Region of Biometrics Society President-Elect (1991-92); President (1992-3); Past President (1993-4)
Institute of Mathematical Statistics: Council Member (1993-1996)

Editorial responsibilities:

Associate Editor: Annals of Statistics (1986-1992); Journal of the American Statistical Association (1988- 1992); International Statistical Review (1987-1991); Journal of Statistical Planning and Inference (1989- 1992); Statistical Science (1991-1994); Journal of Computational Biology (1993-present).

Bibliography

Terence Paul Speed

Publications:

[1] "On rings of sets", *J. Aust. Math. Soc.* **8** (1968), 723-730.

[2] "A note on commutative semigroups", *J. Aust Math. Soc.* **8** (1968) 731-736.

[3] "Some remarks on a class of distributive lattices", *J. Aust. Math. Soc.* **9** (1969) 289-296.

[4] "On Stone lattices", *J. Aust. Math. Soc.* **9** (1969) 297-307.

[5] "Spaces of ideals of distributive lattices I. Prime ideals", *Bull. Soc. Roy. de Liege* No. 11-12, (1969) 610-628.

[6] "Two congruences on distributive lattices", *Bull. Soc. Roy. de Liege* No. 3-4, (1969) 86-95.

[7] "A note on commutative semigroups II", *J. Lond. Math. Soc.* (2), 2 (1970) 80-82.

[8] "A note on commutative l-groups" (with E. Strzelecki). *J. Aust. Math. Soc.* **12** (1971) 69-74.

[9] "A note on random walks" (with R.M. Phatarfod and A.M. Walker). *J. Appl. Prob.* **8** (1971) 198-201.

[10] "A note on Stone lattices", *Cand. Math. Bull.* Vol. 14 (1) (1971) 81-86.

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[12] "A note on Post algebras", *Colloq. Math.* **14** (1971) 37-44.

[13] "Profinite posets", *Bull. Aust. Math. Soc.* **6** (1972) 257-263.

[14] "A note on commutative Baer rings", *J. Aust. Math. Soc.* **14** (1972) 257-263.

[15] "On the order of prime ideals", *Alg. Univ.* **2** (1972) 85-87.

[16] "A note on random walks, II", *J. Appl. Prob.* **10** (1973) 218-222.

[17] "Some remarks on a result of Blomqvist", *J. Appl. Prob.* **10** (1973) 229-232.

[18] "A note on commutative Baer rings, III", *J. Aust. Math. Soc.* **15** (1973) 5-21.

[20] "A note on the second factorisation identity of A.A. Borovkov" (with E. Arjas) *Teor. Verojatnost. i. Primenen.* **18** (1973) 601-604.

[21] "An extension of Cramér's estimate for the absorption probability of a random walk", *Proc. Camb. Phil. Soc.* **73** (1973) 355-359.

[22] "Topics in Markov additive processes" (with E. Arjas). *Math. Scand.* **33** (1973) 171-192.

[23] "Symmetric Wiener-Hopf factorisations in Markov additive processes" (with E. Arjas). *Z. Warscheinlichkeitstheorie und Verw. Geb.* **26** (1973) 105-118.

[24] "A stopping problem in Markov additive processes" (with E. Arjas). Abstract of a paper presented to the Second Conference on Stochastic Processes and their Applications. *Adv. in Appl. Prob.* **5** (1973) 2-3.

[25] "A note on random times" (with J.W. Pitman). *Stoch. Proc. Appl.* **1** (1973) 369-374.

[26] "Spaces of ideals of distributive lattices, II. Minimal prime ideals", *J. Aust. Math. Soc.* **18** (1974) 54-72.

[27] *Discrete Parameter Martingales.* by Jacques Neveu, North-Holland Publishing Company [Translated from French]. (1974)

[28] "Cytological changes in the conjunctiva in the megaloblastic anemias" (with J.D. Brodrick and I.M. Strachan). *Investigative Opthalmology* **13** (1974) 870-872.

[29] "Statistics in school and society", *Mathematical Spectrum* **6** (1974) 7-11.

[30] "Markov chains with replacement" (with E. Arjas), extract from *Adv. Appl. Prob.* **6** (1974) 188-259. Abstract.

[31] "Markov chains with replacement" (with E. Arjas). *Stoch. Proc. Appl.* **3** (1975) 175-184.

[32] "Geometric and probabilistic aspects of some combinatorial identities", *J. Aust. Math. Soc.* **22** (1976) 462-468.

[33] "A note on pairwise sufficiency and completions", *Sankhya Ser. A.* **38** (1976) 194-196.

[34] "Lagrangian distributions and their limit theorems" (with A.G. Pakes). *Siam J. Appl. Math.* **32** (1977) 45-754.

[35] "Electrostatic energy of disordered distributions of vacancies for altervalent ions" (with W.W. Barker, J. Graham and T.C. Parks). *J. Solid State Chem.* **22** (1977) 321-329.

[36] "A factorisation theorem for adequate statistics", *Aust. J. Stat.* **20** (1978) 240-249.

[37] "Intestinal transport of monosaccharide after biliary diversion in the rat" (with Valerie Burke, Ann Malajczuk, M. Gracey, and M.L. Thornett). *Aust. J. Exp. Biol. Med. Sci.* **56** (1978) 253-263.

[38] "Decompositions of graphs and hypergraphs", *Proceedings of First International Conference on Combinational Theory*, Canberra, 1977. Australian Academy of Science and Springer-Verlag, 300-307 (1978).

[39] "Relations between models for spatial data, contingency tables and Markov fields over graphs" *Proceedings of the Conference on Spatial Patterns and Processes.* Supplement to *Adv. Appl. Prob.* **10** (1978) 111-122.

[40] "Multiplicative and additive models for interaction" (with J.N. Darroch). Research Report, Institute of Statistics, Aarhus University. (1979).

[41] "Forsvindende sandsynlicheder og atomkraftsikkerhed: et nyt misbrug af sandsynlighedsregningen?" *RAMA* **1** (1979) 1-33.

[42] "A note on nearest-neighbour Gibbs and Markov probabilities", *Sankhya Ser. A* **41** (1979) 184-197.

[43] "Markov fields and log-linear interaction models for contingency tables" (with J.N. Darroch and S.L. Lauritzen). *Ann. Stat.* **8** (1980) 522-539.

[44] *Brownian Motion*, by T. Hida. Springer-Verlag, New York. [Translation from Japanese done jointly with the author.] (1980)

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Manuscripts Submitted

1. Comparing DNA-DNA hybridization curves by rates of decay (with R. Guerra) Molecular Biology and Evolution.
2. A decision problem in physical mapping (with B. Yu and D.O. Nelson)
3. Modelling crossover interference using the Poisson skip model (with H. Zhao and K Lange).
4. An algorithm for haplotype analysis (with Shili Lin).

RESUMES

ADDITIONAL KEY STAFF

Curtis Alling

Senior Associate, EDAW, Inc.

Mr. Alling is a specialist in environmental impact assessment and complex program management with more than 20 years of experience. He has managed more than 500 EISs, EIRs, EAs, and other studies for federal, state, and local agencies, private industry, and land developers. He has focused on complex, litigious projects with typical contract sizes of $100,000 to over $2 million. His project specialties include water resource projects, water treatment plants, flood control projects, community planning, and interagency environmental consultation programs. He is an expert in the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA), and has been a member of the American Institute of Certified Planners since 1984. Mr. Alling has personally managed or directed ten CEQA documents which have been the subject of litigation. None of those reports has been found inadequate by the courts at the conclusion of litigation. Mr. Alling has also regularly instructed for the Association of Environmental Professionals, American Planning Association, UC Davis Extension, and UCLA Extension on CEQA and NEPA practice.

Education

M.A., *Coastal Resources Planning and Development*, Texas A&M University, 1978
B.S., Wildlife Science, Cornell University, 1975

Awards

American Planning Association (APA)
Association of Environmental Professionals (AEP)
APA/AEP CEQA Reform Task Force, Co-Chair

Professional Experience

Managed the EIR preparation for the **Sacramento Area Water Forum's Regional Water Plan** for the Sacramento City-County Office of Metropolitan Water Planning. The Water Plan is the product of a consensus process among water agencies, business leaders, environmentalists, agricultural leaders, local governments, and public interest groups to provide a reliable water supply to Sacramento, El Dorado, and Placer counties while protecting the fisheries and other sensitive natural resources of the American River. Key issues included fisheries, flood control, recreation, vegetation and wildlife, and growth inducement impacts.

Managed EIR preparation for the 100-mgd **Santa Teresa Drinking Water Treatment Plant** for the Santa Clara Valley Water District. This project was the primary treatment facility for water received from the U. S. Bureau of Reclamation's San Felipe Project. The EIR assessed the impacts of the plant operation on surrounding residences, transport of chemicals, construction of water pipelines, sludge drying and disposal, and plant compatibility with the neighborhood.

Directed the combined EIR/EA for the United Water District water release/groundwater recharge program for water from **Pyramid Lake** in Ventura County. The project involved a joint CEQA/NEPA process with Federal agency involvement including the U. S. Forest Service, U. S. Fish and Wildlife Service, and the Federal Energy Regulatory Commission. Key issues included the water release schedule and instream flow impacts to fisheries (salmon, native and stocked trout), endangered species (arroyo toad), and river recreation (camping, fishing).

Directed the **EIR for the Lower Laguna Drainage Master Plan** for the County of Sacramento, a CEQA document which is also designed to support the preparation of a NEPA EA by the Corps of Engineers. The project involves drainage, water quality, flood control, and wetland mitigation/enhancement for the lower reaches of the Laguna Creek watershed in southern Sacramento County. Key issues include endangered species (giant garter snake, vernal pool-inhabiting fairy shrimp), wetlands impacts, and recreation (bicycle/equestrian trail issues).

Provided expert CEQA compliance counsel related to the **Salinas River Basin Management Plan in Monterey County**. CEQA issues related to the proper use of a program EIR, completeness of the project description, definition of alternatives, scoping of environmental issues, and NOP process were addressed. The BMP is intended to resolve sea water intrusion problems while balancing issues related to providing adequate agricultural and municipal/industrial water supply and protecting the sensitive natural resources of the river.

Managed or directed EIR preparation for five new state prisons which included analyses of water supply and water resource constraints. Each new prison is similar to establishing a new community of up to 4,000 people in a variety of rural, agricultural, or urban settings. State prison projects were evaluated in Coalinga, Susanville, Madera County, Los Angeles, and San Quentin. Water supply analysis in the EIR ranged from the assessing availability of water from existing municipal systems to establishment of new on-site groundwater extraction and treatment facilities.

Managed EIR preparation and 404 permit compliance for the **San Marcos Creek Flood Control Project** in San Diego County. The City proposed establishing a combined natural and engineered channel approach to controlling the flooding in San Marcos Creek, the major watercourse through the planned Civic Center of San Marcos. The EIR evaluated several alternatives ranging from concrete trapezoidal channel to protection of the floodplain.

Directed preparation of the **Roseville 2010 General Plan Update EIR**, involving a comprehensive update of planning policies in this rapidly growing city in Placer County. Policies related to water supply, habitat protection and enhancement, floodplain management, and population growth were among the key issue areas in the EIR.

Directed the Master Environmental Assessment, citywide habitat inventory, and **Draft EIR for the Chico General Plan Update** and EIR, serving as the basis for environmental and natural resources policy formulation. Key issues included fishery resources in area streams, water supply, open space and recreation resources, and habitat protection.

Managed the alternatives analysis and EIR preparation for the **Gilroy/Morgan Hill Long-Term Wastewater Management Program DEIR**, involving decisions on disposal approaches for treated wastewater. This program EIR examined the expansion of wastewater treatment and disposal capacity to accommodate growth in the rapidly growing southern Santa Clara County region for the next twenty years. River discharge to the Pajaro River, a new ocean outfall, land disposal, and combinations of land and river disposal were evaluated as alternatives.

Managed the **North Monterey County Wastewater Planning Study** for the Monterey Regional Water Pollution Control Agency. The study involved establishing 20-year land use and population projections for communities in northern Monterey County. The projections were used as the basis for determining interceptor sewer and wastewater treatment capacity needs for the region.

Served as **Co-Chair of the American Planning Association/Association of Environmental Professionals CEQA Task Force**, an action committee of 20 CEQA practitioners who developed legislative proposals for effectively streamlining CEQA without sacrificing its basic policy purpose.

Actively participates in legislative review for the Association of Environmental Professionals and American Planning Association, including review of bills, review of State CEQA Guidelines changes, recommendation of amendments, and coordination with legislators and their staff.

Technical reviewer for the **Advisory Memoranda series on CEQA prepared by the Governor's Office of Planning and Research**, including advisories on Master EIRs, Mitigated Negative Declarations, and Thresholds of Significance.

Directed and/or managed the preparation of ten CEQA documents that have been successfully defended against litigation, including the EIR for the proposed **San Marcos Landfill Expansion Project** in San Diego County; **Tasman Corridor Project Recirculated Alternatives Analysis/Draft** and **Final EIS/EIR in Santa Clara County**, a $450-million extension of the **Guadalupe Corridor Light Rail Transit system**; major EIR program for the Disney Development Company and City of Anaheim regarding the **Disneyland Resort Project DEIR**; **Trabuco Hills High School Stadium EIR** involving the construction of a lighted stadium which was opposed by surrounding residents; and the California Reception Center - Los Angeles County EIR, a prison reception center opposed by residents of nearby East Los Angeles.

John Hamilton Bair

Botanist, McBain and Trush

Mr. Bair is an ecologist whose expertise includes the physical and ecological relationships between river geomorphology and riparian vegetation communities. He applies his field experience with riparian and wetland restoration and his horticultural skills to riverine restoration planning projects.

Education

M.A., Biology, emphasis in Plant Ecology, Humboldt State University, Arcata, California 1996

B.S., Biology, Humboldt State University, Arcata, California 1994

B.S., Botany, Humboldt State University, Arcata, California 1994

Professional Experience

Fluvial Riparian Ecologist

1995–Present. McBain and Trush Arcata, California.

As a botanist with the Trinity River Maintenance Flow Project, Mr. Bair analyzes the relationships between physical channel dynamics and riparian vegetation, describing the relationships of vegetation to river hydrology and geomorphology. Responsibilities include site mapping, discharge measurements, sediment transport data collection and evaluation, and plant sampling. Also responsible for the development of plant sampling methods and experimental design.

Teaching Associate

1994–1996. Humboldt State University, Arcata, California.

Taught introductory botany laboratory lecturing on many fundamental yet complex topics in the course. Tutored, wrote lab exercises, gave lectures, and held reviews. Provided assistance in course development. Graded tests, essays, lab reports and notebooks.

GS-7 Professional Series Botanist

Jun. 1994–Aug. 1994. USDA Forest Service, Corvallis, Oregon.

Mr. Bair worked for the forest health monitoring project. He recorded and collected all the vegetation quadrat data; identifying all plant species from the ground to the canopy, collecting all species of lichen found at each plot, and assigning cover values.

Restorationist

1993–1994. Redwood Community Action Agency, Eureka, California.

Implemented plans for restoration and mitigation of riparian and wetland projects. These large-scale wetland mitigation projects required the use of excavators, backhoes, tractors, graders, and and other major equipment as well as hand tools.

Project Coordinator and Nursery Manager

1991–1993. Freshwater Farms, Freshwater, California

Mr. Bair was hired to start a wetland nursery. He studied underlying principles in the ecology of salt water marshes, freshwater marshes, estuaries and riparian stand in order to develop the project. Mr. Bair collected native plant species that were primary and secondary riparian and wetland indicators. He prepared the nursery and developed plans for seed collection and propagation. He developed a large collection of wetland grasses and riparian trees and developed a database and accession system for the nursery. Mr. Bair hired and managed eight employees. He also managed client consultation and over saw production from propagation to transportation, and in some cases installation.

Professional Societies

Society for Ecological Restoration
California Native Plant Society

Christine M. Champe

Wildlife Ecologist, Stillwater Sciences

Ms. Champe is a wildlife biologist who conducts ecological research, wildlife habitat planning, and environmental impact assessment. She has studied populations of birds, amphibians, and other wildlife in several regions of the US and the tropics. She has particular experience surveying and estimating the size of migrant bird populations and has worked with many endangered or sensitive wildlife species. Her current work involves sustained yield forest planning; habitat conservation planning; sampling design for birds, mammals, amphibians, and plants; statistical analysis; and project management.

Education

MS, Wildlife and Range Sciences, University of Florida, 1993
BS, Biology and Environmental Studies, Tufts University, 1987

Training

Wildlife Habitat Relationships System Training (CDFG), 1995-1997
Distance Sampling and DISTANCE Software, 1993
Population Estimation (University of Florida), 1992
Hunter Safety, 1994

Experience

Riparian Wildlife Community Studies

Ms. Champe has led wildlife investigations for several projects involving the management and restoration of riparian areas for wildlife. She led the wildlife team in a watershed analysis in southern Oregon, focusing on the effects of a hydroelectric development on riparian-dependent amphibians, small mammals, and birds. In the San Francisco Bay Area, Ms. Champe surveyed riparian forests for migrant and resident birds and helped to develop a watershed management plan that established landscape-level corridors for wildlife habitat connectivity. In the Central Valley, she surveyed wetlands for the endangered giant garter snake and recommended mitigation strategies for its protection.

Threatened, Endangered, and Sensitive Species Research

Ms. Champe has led field teams and participated in surveys for many threatened, endangered, and sensitive species of birds (various migratory songbirds, marbled murrelet, northern goshawk, bald eagle, osprey, spotted owl, Puerto Rican parrot, and yellow-shouldered blackbird), amphibians (several species of frogs and salamanders), reptiles (giant garter snake), and fish (chinook salmon).

Wildlife Habitat and Population Modeling

Ms. Champe has studied the habitat associations of migrant and resident birds, analyzing their densities and seasonal use of various habitat types. She has received training in the California Department of Fish and Game Wildlife Habitat Relationships database system and has used the system to model habitat suitability and predict species presence for many projects. She adapted the WHR system for Louisiana-Pacific's sustained yield plans (SYPs) and habitat conservation plans (HCPs), by establishing linkages from WHR habitat projection data to the habitat suitability matrix in the WHR database, ultimately creating graphs depicting projected long-term trends in biodiversity and habitat suitability. For a project in Oregon's Klamath Marsh, she used USFWS Habitat Suitability Index (HSI) models to evaluate habitat for waterfowl and furbearers, and helped to develop new models for waterfowl. She has used the US Forest Service Snag Recruitment Simulator model to estimate required densities of snags for cavity- excavating birds in California forestlands. Ms. Champe has modeling experience with DISTANCE population density estimation software

and mark-recapture models.

Forest Management and Watershed Planning

Ms. Champe has been responsible for wildlife analyses on several forest management projects for the US Forest Service and private industrial clients. She has developed the wildlife portions of sustained yield plans (SYPs) for Louisiana-Pacific's California forestlands and is currently heading the wildlife team for habitat conservation plans (HCPs) for Louisiana-Pacific and California Department of Forestry's Jackson Demonstration State Forest, working with a watershed assessment team to provide long-term protection guidelines for sensitive wildlife species and habitat. In Shasta-Trinity National Forest, she led the wildlife studies for a forest health environmental assessment in an Option 9 Adaptive Management Area. She supervised extensive field surveys for snags and downed logs, evaluated potential impacts of management alternatives, and wrote the biological assessment/evaluation (BA/BE) for threatened, endangered, and sensitive species. For a timber sale in Tongass National Forest, Alaska, she led field surveys for marbled murrelet, northern goshawk, and spotted frog, and coauthored the wildlife resources inventory report and evaluation of impacts for the environmental impact statement. In the San Francisco Bay Area, Ms. Champe helped to coordinate a natural resource inventory and watershed management plan for the East Bay Municipal Utility District, focusing on issues of biodiversity and water quality. She guided field efforts to survey birds, mammals, reptiles, and amphibians, and to evaluate habitat conditions and potential for habitat restoration.

Wildlife Field Survey Techniques

Ms. Champe has extensive training in the theory and methodology of survey techniques, including variable-distance point-count and transect methods. She is experienced in mist-netting, banding, nest searching, and calling birds; trapping mammals; and conducting time- and area-constrained surveys for amphibians and reptiles. She is familiar by sight and sound with avifaunas of the western and southeastern US and of several tropical areas.

Resource Conservation and Interpretation

As a stewardship intern for the Nature Conservancy, Ms. Champe assisted in the management of Ring Mountain Preserve in the San Francisco Bay Area. She also gave visitor tours and staffed a visitor interpretation center for the Mono Lake Committee in eastern California, discussing sustainable resource use with tourists from around the world.

Professional Societies

The Wildlife Society
Society of Conservation Biology
Cooper Ornithological Society
Ecological Society of America

Selected Publications and Presentations

Champe, C.M., D.J. Levey, and E. Van der Werf. 1993. Life history traits do not provide a simple explanation for population declines of Nearctic-Neotropical migrant birds. Presented at the Annual Meeting of the Ecological Society of America. Madison, Wisconsin. August.

Champe, C.M. 1993. Bird communities in native and agricultural habitats in south-central Florida. Presented at the Annual Meeting of the Cooper Ornithological Society, Sacramento, California. March.

Champe, C.M. 1994. Book review: Ecology and conservation of neotropical migrant landbirds (D.W. Johnston and J.M. Hagan, eds.). Florida Field Naturalist.

Robert Coats, PhD

Senior Scientist, Stillwater Sciences

Dr. Coats has over 20 years of experience focusing on the hydrologic and ecological effects of land management on aquatic ecosystems. This work has concentrated in two areas: forested watersheds and wetlands. In both areas, he has drawn on his background in hydrology, ecology, and soil science. His long-term research interests are focused on nitrogen cycling and biogeochemistry at the watershed level.

In the area of forested watersheds, his experience includes: research on the effects of land disturbance on water quality; evaluation of the effects of silvicultural activities on both site quality and water quality; review of proposed timber harvest plans and National Forest plans; reclamation and hydrologic aspects of strip mining; and testimony as an expert witness on causes of debris torrents and floods in steep forested watersheds.

Dr. Coats' work with wetlands has included: the design of numerous wetland restoration and enhancement projects; analysis and testimony as an expert witness in cases involving wetland jurisdiction and spread of contamination in wetlands; and preparation of management plans for endangered plant habitat.

Much of Dr. Coats' work has involved management of large projects involving major resource conflicts and institutional complexity. In addition to project management, Dr. Coats' experience includes personnel management and directing a professional development program.

Education

Ph.D., Wildland Resource Science, specializing in watershed management and water quality, University of California School of Forestry and Conservation, Berkeley, and Division of Environmental Studies, Davis, 1975

M.S., Forestry, specializing in soils and plant ecology, University of Minnesota, 1967

B.S., Forestry, University of California School of Forestry, Berkeley, 1965

Awards

1978-1979	Rockefeller Foundation Fellowship in Environmental Affairs
1969-1971	The National Science Foundation Traineeship
1965	Faculty Citation, University of California School of Forestry

Professional Experience

1997-present	Senior Scientist Stillwater Ecosystem, Watershed & Riverine Sciences, Inc. Berkeley, CA
1986-1997	Principal Philip Williams & Associates, Ltd., San Francisco, CA
1983-1986	Senior Associate Philip Williams & Associates, San Francisco, CA
1982	Visiting Lecturer, Department of Soil and Plant Biology University of California, Berkeley
1978-1983	Staff Scientist, The John Muir Institute, Berkeley, CA

1978-1983	Staff Scientist, The John Muir Institute, Berkeley, CA
1974-1978	Teaching Associate, Department of Conservation and Resource Studies University of California, Berkeley
1972-1974	Research Associate, University of California, Davis.

Professional Societies

American Geophysical Union
American Association for the Advancement of Science
California Forest Soils Council
Society for Ecological Restoration
Watershed Management Council

Selected Publications

Coats, R.N., 1997. Evaporation, Evapotranspiration. In: Encyclopedia of Environmental Science, van Nostrand-Reinhold, (in press).

Coats, R.N., 1997. The Riparian Zone. In: Encyclopedia of Environmental Science, van Nostrand-Reinhold (in press).

Coats, R.N., and C.R. Goldman, 1993. Nitrate transport in subalpine streams, Lake Tahoe Basin, California-Nevada, USA. Supplementary Issue No. 2:17-21, Applied Geochemistry, Presented at the Second International Symposium on Environmental Geochemistry, Uppsala, Sweden, September, 1991.

Coats, R.N., M.A. Showers, and B. Pavlik, 1993. Management plan for an alkali sink and its endangered plant Cordylanthus palmatus. *Environmental Management*, 17(1):115-127.

Coats, R.N., and L.H. MacDonald, 1989. Use of hydrologic criteria in wetland delineation. Urban Wetlands: Proceedings of the National Wetland Symposium, Association of Wetland Managers, Inc., Berne, NY, pp. 164-172.

Coats, R.N., M.A. Showers, and B. Pavlik, 1989. The Springtown alkali sink: An endangered ecosystem. Fremontia, 17(1):20-23.

Coats, R.N., M.L. Swanson, and P.B. Williams, 1989. Hydrologic analysis for coastal wetland restoration. Environmental Management, 13(6):715-727.

Coats, R.N., 1987. Cumulative watershed effects: A historical perspective. Proceedings: California Watershed Management Conference, Wildland Resource Center, University of California, Berkeley, pp. 107-111.

Coats, R.N., C. Farrington, and P.B. Williams, 1987. Enhancing diked wetlands in coastal California. Proceedings: Coastal Zone '87 Conference, Seattle, WA, ASCE, New York, pp. 3688-3700.

Coats, R.N., L. Collins, J.L. Florsheim, and D. Kaufman, 1985. Channel change, sediment transport and fish habitat in a coastal stream: Effects of an extreme event. *Environmental Management*, 9(1):35-48.

Coats, R.N., 1984. The Colorado River: River of controversy. *Environment*, 26(2):7-13, 36-40.

Coats, R.N., and L. Collins, 1984. Landsliding, channel change and sediment transport in a suburban forested watershed: Effects of an extreme event. Proceedings: Symposium on the Effects of Forest Land Use on Erosion and Slope Stability, East-West Center, Honolulu, HI, pp. 165-175.

Coats, R.N. (ed.), 1982. Proceedings: Symposium on watershed rehabilitation in Redwood National Park and other Pacific coastal areas. The John Muir Institute, Napa, CA, 360 pp.

Coats, R.N., and L. Collins, 1981. Effects of silvicultural activities on site quality: A cautionary review. California Department of Forestry, Sacramento, CA, 39 pp.

Coats, R.N., and T.O. Miller, 1981. Cumulative silvicultural impacts on watersheds: A hydrologic and regulatory dilemma. *Environmental Management*, 5(2):147-160.

Coats, R.N., and T.O. Miller, 1981. Developing best management practices for California forests: A 208 progress report. *Journal of Soil and Water Conservation*, 36(4):205-208.

Leonard, R.L., L.A. Kaplan, J.F. Elder, R.N. Coats, and C.R. Goldman, 1980. Nutrient transport in surface runoff from a subalpine watershed, Lake Tahoe, California. *Ecological Monographs*, 49(3):281-310.

Coats, R.N., 1978. The road to erosion. *Environment*, 20(1):16-20, 37-39.

Coats, R.N., R. Leonard, and C.R. Goldman, 1976. Nitrogen uptake and release in a forested watershed, Lake Tahoe Basin, California. *Ecology*, 57:995-1104.

Coats, R.N., R.L. Leonard, and S.L. Loeb, 1975. Removal of nitrogen from snowmelt water by the soil-vegetation system, Lake Tahoe, California. Proceedings: 43rd Annual Western Snow Conference, San Diego, CA.

Coats, R.N., 1971. Indonesian timber. *Pacific Research*, Pacific Studies Center, Palo Alto, CA, 2(4):9-16.

Coats, R.N., 1970. The California coast - 900 miles of "Tahoe-by-the-sea". *San Francisco Bay Guardian*, 5(1):4-5.

Coats, R.N., W.A. Geyer, and E.I. Sucoff, 1968. Synecological light coordinates: A verification by light measurements. Minnesota Forestry Research Notes 199.

Bruce Orr, PhD

Senior Ecologist, Principal, Stillwater Sciences

Dr. Orr has 19 years of experience in population and community ecology of aquatic, terrestrial, and wetland environments in the western United States. His areas of technical expertise include natural resources inventory and management planning, wetlands and freshwater ecology, aquatic entomology, and flora and vegetation of the western United States. He is experienced in wetland delineation and functional assessment; threatened and endangered species surveys; plant community classification and mapping; mitigation planning; and environmental impact assessment. Dr. Orr has managed a number of complex, multi-year projects involving interdisciplinary teams conducting natural resource inventories, assessments, and watershed analysis in a variety of habitats; developing natural resource management plans; and producing environmental impact assessment documents. Dr. Orr is a co-founder and principal of Stillwater Ecosystem, Watershed & Riverine Sciences.

Education

Ph.D., Entomology (Ecology/Aquatic Entomology), University of California at Berkeley, 1991

Graduate Studies in Ecology (Aquatic and Population Biology), University of California at Santa Barbara, 1979-1982

BA, Biological Sciences and Environmental Studies, University of California at Santa Barbara (high honors), 1979

Training

CDFG certification in California Wildlife Habitat Relationships (WHR) system, 1995

Applied Fluvial Geomorphology Course, taught by David Rosgen and Luna Leopold, 1993

National Wetlands Science Training Cooperative Certification in Jurisdictional Delineation of Wetlands, 1993

USFWS Habitat Evaluation Procedures (HEP), 1992

Experience

Integrated Natural Resource Analysis and Management Planning

Dr. Orr is an experienced project manager and interdisciplinary team leader for projects involving natural resource inventories and integrated natural resource management plan development. He currently serves as project manager for Louisiana-Pacific's multi-species Habitat Conservation Plans (HCPs) and the watershed, fisheries, and wildlife assessment components of sustained yield plans (SYPs) in northern California. This 3-year project involves the development of SYPs and HCPs covering over 300,000 acres of industrial forestands owned by Louisiana-Pacific, with a total watershed and wildlife assessment area exceeding one million acres. He is also project manager for development of a multi-species HCP, SYP, and programmatic timberland EIR for the California Department of Forestry and Fire Protection's 50,000 acre Jackson Demonstration State Forest. He recently served as technical manager for a multidisciplinary effort involving natural resource inventories and development of biodiversity and ecosystem management plans for a 28,000-acre watershed master plan project in the San Francisco Bay Area.

Aquatic Ecology

Dr. Orr has a broad background in general limnology and stream ecology. He has sampled aquatic invertebrates in a wide variety of freshwater and brackish-water habitats; conducted limnological surveys to determine physical and chemical characteristics of lakes and wetlands; conducted experimental studies on interactions among predators, zooplankton, and phytoplankton in lentic systems; applied EPA's Rapid Bioassessment Protocols to examine impacts of hydropower

development on stream macroinvertebrates in Southern California; and served as co-manager for a long-term study examining the effects of different summer flow regimes on fish and benthic macroinvertebrate communities in the lower Tuolumne River and experimental studies of the influence of turbidity on the predation of juvenile salmonids by black bass. He has conducted studies of the effects of stream flow on riparian vegetation in the Sierra Nevada and is involved in instream and riparian habitat restoration efforts on the lower Tuolumne River.

Wetlands Biology

Experienced in jurisdictional delineation of wetlands. Designed and conducted field surveys, laboratory experiments, and field experiments on interactions among aquatic vegetation, predators, and macroinvertebrates in freshwater wetlands of California. Conducted investigations of historical changes in geomorphology and salt marsh vegetation, and field surveys of plant distributions, in the San Francisco Bay Area. Expertise in biological control of mosquitoes in wetlands. Experienced in the use of wetland assessment techniques, including WET. Recent involvement in studies of palustrine, lacustrine, and riparian wetlands in California, Oregon, and Montana, including studies of ecological relationships among hydrology, vegetation, and wildlife for over 100 square miles of freshwater wetlands in southern Oregon.

Terrestrial Ecology

Dr. Orr is experienced in field survey techniques and identification of terrestrial plants, insects, and vertebrates. Dr. Orr served as task leader or project manager on a variety of studies assessing project impacts on terrestrial vegetation and wildlife, including plant and wildlife surveys in a variety of habitats in California, Oregon, and Montana. He has 6 years of experience teaching college laboratory and field courses in terrestrial ecology and natural history. His recent experience as project manager or technical task leader includes wildlife habitat assessment using HEP and other techniques for extensive studies of riparian and freshwater marsh habitats in southern Oregon; development of an integrated natural resource management plan for Robins AFB, Georgia; vegetation management environmental assessments and ecological unit inventories for the Angeles and Cleveland national forests; and impact assessments for a variety of projects in California. He is currently a member of the California Native Plant Society statewide Vegetation Committee charged with developing and implementing a new vegetation classification system and standardized sampling protocols for California plant communities.

Surveys for Rare, Threatened, and Endangered Species

Dr. Orr conducted surveys for rare, threatened, and endangered (RTE) plants and animals in various wetland and terrestrial habitats in the Central Valley and San Francisco Bay regions of California and in riparian habitats in Montana. He conducted rare plant and general floristic and faunal surveys in coastal foredune, backdune, and salt marsh habitats in northern Santa Barbara County and in a variety of habitats in the Sierra Nevada and Southern California. He was recently involved in inventory and mitigation studies of RTE species for projects in the western Sierra Nevada, central California, and habitat planning for RTE species in northern California forestlands. Dr. Orr was senior technical advisor for an endangered dragonfly study, involving field surveys, metapopulation analysis, and mitochondrial DNA studies in support of environmental impact, habitat restoration, and regulatory permitting project in Ohio wetlands.

Professional Affiliations

American Institute of Biological Sciences
California Native Plant Society
Ecological Society of America
North American Benthological Society
Society for Ecological Restoration
Watershed Management Council

Selected Publications and Presentations

Orr, B.K. 1997 (*in press*). Ecosystem health and salmon restoration: a broader perspective. Invited paper prepared for a special session on "The role of applied ecological research in the management of a regulated river: New Don Pedro Dam and the Tuolumne River," International Association for Hydraulic Research Conference, San Francisco, CA. August 11-15, 1997.

Olson, C. and B. Orr. 1997 (*in press*). Combining tree growth, fish and wildlife habitat, mass wasting, sedimentation, and hydrologic models in decision analysis and long-term forest land planning. Paper presented at First Biennial North American Forest Ecology Workshop, Raleigh, NC. June 23-27, 1997.

Lacey, L. and B.K. Orr. 1994. The role of biological control of mosquitoes in integrated vector control. American Journal of Tropical Medicine and Hygiene 50(6) Suppl: 97-115 (invited paper).

Smyth, A.P., B.K. Orr, and R.C. Fleischer. 1993. Electrophoretic variants of egg white transferring indicate a low rate of intraspecific brood parasitism in colonial cliff swallows in the Sierra Nevada, California. Behavioural Ecology and Sociobiology 32:79-84.

Orr, B.K. and V.H. Resh. 1992. Influence of *Myriophyllum aquaticum* cover on Anopheles mosquito abundance, oviposition, and larval microhabitat. Oecologia 90:474-482.

Orr, B.K., S. Morhardt, and R.D. Stone. 1991. Influence of drought on the distribution and abundance of montane riparian plants along a western Sierra Nevada stream. Paper presented at the California Riparian Systems Conference III: Progress in Protection and Restoration, Sacramento, California. 16 November.

Orr, B.K., W.W. Murdoch, and J.R. Bence. 1990. Population regulation, convergence, and cannibalism in *Notonecta* (Hemiptera). Ecology 71(1): 68-82.

Orr, B.K. and V.H. Resh. 1989. Experimental test of the influence of aquatic macrophyte cover on the survival of *Anopheles* larvae. Journal of the American Mosquito Control Assoc. 5:579–585.

Collins, J.N. and B.K. Orr. 1989. An ecological overview of the Coyote Hills wetlands, *in* Talk about Wetlands, Proceedings of the Coyote Hills Wetlands Workshop, 10–11 February 1987, Coyote Hills Regional Park, Fremont, California (J. Collins and K. Burger, eds.), pp. 34–42.

Collins, J.N., E.P. McElravy, B.K. Orr, and V.H. Resh. 1988. Preliminary observations on the effects of the intersection line upon predation of *Anopheles* mosquito larvae. Bicovas (Proceedings of the International Conference on Biological Control of Vectors with Predaceous Arthropods. Loyola College, Madras, India.) 1:1–12.

Orr, B.K. and V.H. Resh. 1987. Interactions among mosquitofish *(Gambusia affinis)*, Sago pondweed *(Potamogeton pectinatus)*, and the survivorship of *Anopheles* mosquito larvae. Proceedings of the California Mosquito and Vector Control Association 55:94–97.

Orr, B.K. and V.H. Resh. 1986. Spatial-scale considerations in predator-prey experiments. Proceedings of the California Mosquito and Vector Control Association 54:105–109.

APPENDIX D.

FORMS

Item 8

NONDISCRIMINATION COMPLIANCE STATEMENT

COMPANY NAME
Stillwater Sciences

The company named above (hereinafter referred to as "prospective contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 (a-f) and California Code of Regulations, Title 2, Division 4, Chapter 5 in matters relating to reporting requirements and the development, implementation and maintenance of a Nondiscrimination Program. Prospective contractor agrees not to unlawfully discriminate, harass or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, denial of family and medical care leave and denial of pregnancy disability leave.

CERTIFICATION

I, the official named below, hereby swear that I am duly authorized to legally bind the prospective contractor to the above described certification. I am fully aware that this certification, executed on the date and in the county below, is made under penalty of perjury under the laws of the State of California.

OFFICIAL'S NAME
Frank Ligon

DATE EXECUTED
26 July 1997

EXECUTED IN THE COUNTY OF
Alameda

PROSPECTIVE CONTRACTOR'S SIGNATURE

PROSPECTIVE CONTRACTOR'S TITLE
President

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME
Stillwater Ecosystem, Watershed, & Riverine Sciences

Item 12

Agreement No. _____

Exhibit _____

STANDARD CLAUSES --
SMALL BUSINESS PREFERENCE AND CONTRACTOR IDENTIFICATION NUMBER

NOTICE TO ALL BIDDERS:

Section 14835, et. seq. of the California Government Code requires that a five percent preference be given to bidders who qualify as a small business. The rules and regulations of this law, including the definition of a small business for the delivery of service, are contained in Title 2, California Code of Regulations, Section 1896, et. seq. A copy of the regulations is available upon request. Questions regarding the preference approval process should be directed to the Office of Small and Minority Business at (916) 322-5060. To claim the small business preference, you must submit a copy of your certification approval letter with your bid.

Are you claiming preference as a small business?

__X__ Yes* _____ No

*Attach a copy of your certification approval letter.

D.STATE OF CALIFORNIA STATE AND CONSUMER SERVICES AGENCY PETE WILSON, Governor

DEPARTMENT OF GENERAL SERVICES
Office of Small and Minority Business
1531 I Street, Second Floor
Sacramento, CA 95814-2016

May 22, 1996

REF #0014919
STILLWATER ECOSYSTEM, WATERSHED
& RIVERINE SCIENCES
2710 LE CONTE #4
BERKELEY CA 94709

Dear Businessperson:

The Office of Small and Minority Business (OSMB) conditionally approves your firm's small business certification request effective 05-15-1996 through 05-31-1998. This certification enables your firm to use the five percent bidding preference on state government contracts according to the Small Business Procurement and Contract Act. Status reverification may occur any time the OSMB deems appropriate. The small business certification applies **ONLY** to the following industry group(s) within the designated business type(s):

Business Type(s)	Industry Group(s)	Description
Service:	(v)	Consulting, Management and Public Relations

1. Current small business certification status requires:

   A. **Annual** submission of the following items for the most recently completed tax year:

   - The ENTIRE **SIGNED** Federal Tax Returns (FTRs) as submitted to the Internal Revenue Service (IRS) for the applicant and each affiliate.
   - An original notarized "Affidavit of Income" (AI) form (enclosed) in lieu of the most recently completed tax year's FTR(s) for the applicant and each affiliate. **The AI must be submitted at the conclusion of each tax year and is only valid for 90 days.** If you are unable to provide the FTR(s) prior to the AI's 90 day expiration, submit a copy of a valid Federal tax filing extension for each required FTR. **The appropriate FTR(s) must be provided prior to the filing extension's expiration.**
   - It is the applicant firm's responsibility to submit the above requirements. Non-submittal of the aforementioned will result in your firm's small business certification status suspension, which may lead to status revocation.

   B. Written notification of **any** address change, signed by an owner/officer.

   C. **ALL** changes in business name, structure or ownership **require** completion of a new Std. 812 form.

2. **Only** certified service and commodity small business firms actively working with the state may participate in the Prompt Payment Act Program. Construction firms compensation on late/unpaid progress payments is addressed in Public Contract Code, Section 10261.5. Eligible firms that properly submit prompt payment stamp requests will receive a rubber stamp with the firm's corresponding OSMB REF (reference) number. The prompt payment stamp will be mailed along with instructions for its proper use. Allow two to three weeks for processing. To receive a prompt payment stamp, *the following* ***three*** *items must be* submitted to the OSMB:

   A. A written rubber stamp request to the OSMB. Include the applicant firm's name, OSMB REF number and current mailing address;

   B. A copy of a current state contract or purchase order soliciting services from the applicant; and

   C. A $15.00 check or money order made payable to the Department of General Services.

Please maintain this original certification approval letter for future business needs. To receive the five percent preference when bidding on a state contract, the awarding agency will require small business certification verification. Include a copy of this letter when submitting your state contract bid. Prior to contract award, agencies will assure the vendor is in compliance with Public Contract Code, Section 10410 et seq. addressing conflict of interest for state officers, state employees or former state employees.

The OSMB will send a renewal application prior to your small business certification expiration. Thank you for doing business with the state.

Sincerely,

Sherry Harm

Sherry Harm
Programs/Certification Officer
(916) 322-7120

SH:rci

Enclosures

APPENDIX E.

MERCED COUNTY PLANNING DEPARTMENT
LETTER OF SUPPORT

PLANNING AND COMMUNITY DEVELOPMENT
DEPARTMENT
2222 'M' STREET
MERCED, CALIFORNIA 95340
TELEPHONE (209) 385-7654
FAX (209)726-1710

ROBERT E. SMITH
Director
WILLIAM NICHOLSON
Assistant Director

July 23, 1997

Jennifer Vick
Still Water Sciences
2532 Durant Street, Suite 201
Berkeley, California 94704

SUBJECT: PROPOSED RIVER CORRIDOR PLAN

Dear Ms. Vick:

Thank you for contacting Merced County Planning Department regarding your interest in pursuing CALFED funding for a Merced River Corridor Plan. You requested County support for and cooperation with the proposed plan.

As Desmond Johnston, Environmental Coordinator, discussed with you, the County Board of Supervisors expressed a desire for such a plan several years ago. Then, as now, we were unable to draw staff and resources away from other priorities in order to devote time to the project. Today we have several new Board members, and we cannot provide you with an updated position from the Board in the time frame required to meet the grant application deadline. However, we have attached the Board Agenda Item from May 19, 1992 which clearly indicates the will of the Board at that time, and staff has not seen reason to believe the County's perspective has changed. At the Board's direction, we have been cooperating with the California Department of Fish and Game, mine operators and landowners in seeking development of a River Enhancement Plan for a portion of the Merced River east of the Snelling Highway Bridge. Progress on that concept has been very slow, and your proposed plan may be a solution.

We can request that the Board consider a resolution in support of this renewed effort if it will facilitate the CALFED grant, but again, this could not be accomplished by your July 28, 1997 deadline. In the meantime, the Planning Department encourages your effort to seek grant funding for the plan. We commit to further discussions on how the plan may be utilized by the County and its relationship to the County General Plan.

Please do not hesitate to contact our office if we can be of further assistance.

Sincerely,

William R Nicholson

William R. Nicholson
Assistant Director

Attachment

ADMINISTRATION
LOG NO. 92355

3:

BOARD AGENDA ITEM

TO: BOARD OF SUPERVISORS
THROUGH: COUNTY ADMINISTRATOR
FROM: ROBERT E. SMITH, PLANNING DIRECTOR

SUBJECT: MERCED RIVER CORRIDOR PROTECTION/ENHANCEMENT PLAN

SUMMARY:

On April 7, 1992, following the public hearing on the Carson surface mine conditional use permit, members of the Board of Supervisors requested that staff consider development of a plan for the protection and enhancement of the Merced River corridor.

Staff has contemplated what may be involved in the preparation of such a plan. An initial step would be the development of a program for the preparation of the plan. The program would specify the probable sequence of major tasks, with corresponding time and cost estimates. Staff also recognizes the need to draft preliminary goals and objectives of the plan which will serve to direct the program and may become the basis of the plan. Following these two preliminary efforts, staff would present the program and draft policies to the Board for further direction.

STAFFING IMPACT: Approximately 40 hours for preliminary work (program and draft policies).

FISCAL IMPACT: Staff time, approximately $1,000.00.

CONTRACT/RESOLUTION/ABSTRACT SUBMITTED No

REQUEST REVIEWED BY:

Co. Counsel ; Administration

ADMINISTRATION RECOMMENDATION COMMENT:

REQUEST/RECOMMENDATION/ACTION NEEDED:

The Merced River Corridor Protection/Enhancement Plan is being presented to the Board for information only. No action is necessary unless the Board wishes to provide specific direction to the Planning Commission.

5/19/92

For Board Staff Only: **TO:** ADMIN, PLANNING

BOARD ACTION 5/19/92 O'BANION/PETERSON

X **INFORMATION ONLY** **MODIFIED** **APPROVED RECOMMENDATION**